THE NATIONAL GEOGRAPHIC MAGAZINE

Vol. XIII FEBRUARY, 1902 No. 2

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McCLURE, PHILLIPS & CO.

$2.50 a Year NEW YORK 25 Cents a Number

REPRINT

Entered at the Post-office in Washington, D. C., as Second-class Mail Matter.

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THE NATIONAL GEOGRAPHIC MAGAZINE

AN ILLUSTRATED MONTHLY, published for the NATIONAL GEOGRAPHIC SOCIETY, of Washington, D. C., by McCLURE, PHILLIPS & Co., at 141 East 25th Street, in New York City, to whom all business communications should be addressed. Editorial communications should be addressed to the Managing Editor of the NATIONAL GEOGRAPHIC MAGAZINE, Corcoran Building, Washington, D. C.

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VOL. XIII, No. 2 WASHINGTON FEBRUARY, 1902

THE NATIONAL GEOGRAPHIC MAGAZINE

A TRIP THROUGH SIBERIA*

BY EBENEZER J. HILL, MEMBER OF CONGRESS FROM CONNECTICUT

IT has been my pleasure during the present year to make a trip around the world, starting from New York and journeying westward until I again reached New York, five months and fifteen days later. The route was through Hawaii, Guam, the Philippines, China, Japan, Korea, and by the Amur River and Trans-Siberian Railroad across Asia into Europe.

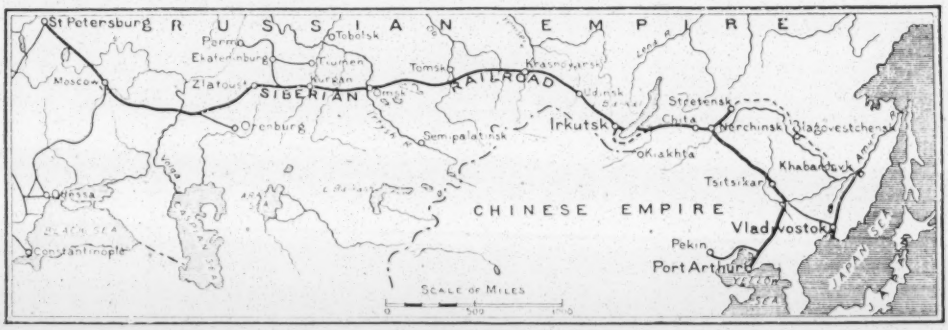
It is of this latter portion of the trip that I have been requested by your Society to give some reminiscences, supplemented by views of the country, both mental and photographic. Its history can be quickly told, for it illustrates the Russian saying that "*the empire only goes where the Cossack can march dryshod.*"

THE RUSSIAN CONQUEST OF THE AMUR VALLEY AND MANCHURIA

Its conquest was begun in 1580 by a robber chief named Yermak, who crossed the Urals and, defeating the Tatars, gave their lands as his own peace offering to the Russian Emperor, Ivan the Terrible. For sixty years the Cossacks fought their way eastward until they reached the Okhotsk Sea, easily routing the scattered tribes of the northern country; but it was not until 1650 that Khabarovsk, a Russian farmer, led them into the Amur Valley. His memory has been perpetuated in the name of the flourishing city which stands today at the junction of the Amur and Usuri Rivers. The Manchus were a warlike people, and the Black Dragon River, as they called the Amur, was their northern boundary. After a contest which continued forty years, they drove the Russians back and held undisputed possession for a hundred and sixty-six years, until 1854, when General Muravieff notified China that, with or without her consent, he proposed to resume control of the Amur River. In 1855 he reëstablished the Cossack stations its entire length, and in 1860, by the treaty of Aigun, this splendid valley of a river navigable for two thousand miles, and with it the whole Pacific coast of Manchuria, reaching westward to the Usuri River and southward to Korea, was given up to Russia without a struggle.

That one accession made Siberia what it is today. Without it, it was

*An address before the National Geographic Society, December 20, 1901.



Sketch Map of Siberian Railway

and would have remained a trackless waste. With it, it will be an empire which within a century will exercise more influence in the world's affairs than European Russia ever has, for it is sure to be the dominant power in the Orient, where half the population of the world is found, and it is not impossible that in some distant future the United States of North America may clasp hands across the Pacific with the United States of Northern Asia.

In the public park in Khabarovsk, on a high bluff overlooking the Amur and Usuri Valleys, there stands a splendid statue of General Muravieff. His back is turned upon the conquests of the past and he is looking *at* and pointing *toward* Manchuria.

As I sat and gazed at it and thought of the events of the past two years, I fancied I could see the bronze eyes twinkle and the lips move with a shout of triumph, *for the Cossack has marched again*, and by fire and sword almost to the Chinese wall, has established Russian control over all Manchuria.

ITS VASTNESS

Few people realize the immensity of Siberia, for it is impossible for the mind to grasp the meaning of five million five hundred thousand square miles. To think of a single state stretching through one hundred and thirty degrees of longitude and covering thirty-two degrees of latitude and equalling one-ninth of the land surface of the globe is almost inconceivable.

Let us measure it by countries with which we are familiar. Take all of the United States between the oceans and add Alaska, the Philippines, Hawaii, and Porto Rico; then add England, Ireland, Scotland, and Wales; then cross the English Channel and take France, Belgium, Holland, Denmark, Norway and Sweden, Germany, Switzerland, Italy, Spain, and Portugal, Austria, Greece, Turkey, Bulgaria, Roumania, and Servia, making all of Europe except Russia, and you could put them *all* in Siberia and have land enough left to make thirty-five states like Connecticut, and Manchuria will make seventy more.

SURPRISES

I had thought of Siberia as a convict settlement only, with a small population composed largely of criminals and political exiles. I found it a country of nearly nine million people, 97 per cent of whom were either natives or voluntary immigrants, with the exile system discontinued or transferred to the island of Sakhalin, and all, as a rule, earning better wages, living in better houses, having better food and clothing, and enjoying much more political and religious liberty and personal freedom

than in European Russia, and indeed in some other European countries in whose behalf our sympathies have not been evoked.

I had believed it to be a frozen wilderness and a desert waste. The portion through which I traveled was a land like Minnesota, the Dakotas, and the foothills of the Rockies, where wheat and rye and vegetables matured; where strawberries, currants, and raspberries abound; where sheep, horses, and cattle graze unsheltered throughout the year, and where a greater extent of virgin forest of splendid birch and pine is found than the whole area of the United States. I was told, and I believe it is true, that straight through from the Kingan Mountains to the Urals for about 400 miles north of the Trans-Siberian Road like conditions prevailed, and north of this tillable land was 400 miles more of unbroken forest before the frozen tundra or Arctic waste was reached.

A Steamer Landing on the Amur

I expected to find in every town a convict prison full of exiles and criminals. With the exception of two convict barges floating down the Amur on their way to Sakhalin, I saw no trace of the system, but I did see in every town and village, no matter how small or humble, the dome of a Russian church, and in the larger cities Catholic and Lutheran churches as well.

I had been told that Russian officials were peculiarly susceptible to tips and fees, and of course expected to be fit plunder for hotel keepers, porters, and all others with whom a traveler comes in contact; but after a somewhat extensive experience in most of what we call the civilized countries of the world, I want to record as my opinion that nowhere have I had so courteous treatment, so generous assistance, and so hearty welcome as in Siberia, both from the officials and civilians as well. I do not think that this was exceptional in my case, but that any American traveler with proper credentials and without a mission to reconstruct the government and reform all of its abuses at once would have the same experience.

I was cautioned to be an American and nothing else in Russia, and while I did not need the advice, I followed it and found in doing so that as a nation and as individuals we had the confidence, respect, and regard of all.

But the greatest surprise to me was the country itself, so wholly unlike what I had expected, and since I have returned to my home and read the descriptions of it, written before the railroad was built, I have wondered whether I could have been mistaken in my judgment of it.

NOTES ON THE GENERAL GEOGRAPHY OF SIBERIA

It was my practice daily to jot down notes of the physical geography and

general appearance of the country through which we passed, not as a connected diary, but as bench-marks, so to speak, for future reference. Let me read them to you, that you may judge for yourselves what Siberia is along the line of the Trans-Siberian Railway and in the Amur Valley.

Arrived at Vladivostok July, 2, 1901. Left Vladivostok 9 a. m., July 4. Very soon after leaving Amur Bay the road enters the valley of a river, and, judging by the soil, grass, and flowers, we seem to be transported into a rich river valley of our own West. Here and there is an apparently thriving village, and prosperous farms are intermingled with virgin prairie. A great change has evidently come here from Russian occupation. As we go north the country improves; magnificent stretches of well-watered prairie, wheat farms, large herds of cattle, and fine grass. The depots are well-built, pretty wooden cottages, and in each town, on the highest point, the domes of the Russian churches are seen.

A Woodyard on the Amur River

Friday, July 5.—The country has changed, and we are in the timber. Birch shows where pine has been cut off, and the hills in the distance indicate heavy timber. A train composed almost wholly of cars loaded with 3 x 10 white pine tells of pine trees somewhere, and gnats and mosquitoes and flies tell of timber. It is getting very warm, and summer clothes will be in order. At 4.30 Khabarovsk came in sight. The city here is to be fine. It is evidently new. The streets are wide and straight. It spreads over high bluffs, from which one looks down on the Amur River, which is a mile and a half wide here.

Saturday, July 6.—Left Khabarovsk at 6.30 p. m.

Sunday, July 7.—Mosquitoes and flies abound. The Amur is a wonderful river. It is more than a mile wide and seems like a great lake. Thus far it flows through a prairie country and splendid tillable land, which will some day raise the world's wheat supply; Russia on the north bank, China on the south. Russia holds Manchuria and will never let it go. The country is a splendid one. Mountains are occasionally seen in the distance, but here all is prairie, and the river banks show at least ten feet of soil.

Monday, July 8.—Surroundings similar to those of yesterday. Occasionally, but rarely, we pass a small settlement. All through the afternoon and evening we were passing through the Kingan Mountains. Here they are a series of hills 500 to 800 feet high. The scenery is fine, the mountains coming boldly down to the river. I am reminded of the Fraser River, especially when we come to a mining camp, where the Russians first attacked the Chinese and drove them out.

Tuesday, July 9.—This morning we are out of the mountains

and in an alluvial country again. The river still holds its great width.

Wednesday and Thursday, July 10 and 11.—Surroundings similar to foregoing.

Friday, July 12.—Reached Blagovestchensk; city a fine one; good buildings, wide streets, and excellent stores.

Saturday, July 13.—Left Blagovestchensk at 8 p. m.

Sunday, July 14.—Evening. The banks are again steep, and low mountains appear on both sides of the river. The current runs very swiftly.

Monday, July 15.—Noon: Mountains bordering river on the south side, prairie on the north. Evening: Mountains change to the north side.

Tuesday, July 16.—The enormous horseflies, fully an inch long, have been exceedingly annoying all day.

Wednesday, July 17.—The most interesting thing in natural scenery has appeared today—the so-called White or Tsaigon Mountains. They are uneven hills of sand rock, at least 500 feet high, bordering the river, and continually breaking off and wearing away. They show the strata, and layers are seen which seem to be on fire. The smoke is visible at points in the daytime, and it is said that fire is seen at night. I think that instead of being burning coal, as claimed, it is discoloration from hot springs, which exude vapor like the mud springs of the Yellowstone. Flies and mosquitoes abound.

Thursday and Friday, July 18 and 19.—River very shallow and progress slow. Smoke from burning forests somewhere, very dense, compelling us to stop.

Sunday, July 21.—Reached Albasin and Reinovo.

Monday, July 22.—Day delightfully cool. The scenery, while not remarkable, has been more attractive than before.

Stuck on the Amur

Tuesday, July 23.—Reached Povrosk, the junction of the Shilka and Aigun Rivers. The character of the country thus far can be somewhat judged by the fact that though we have sailed the Amur 1,200 miles nearly, we have not seen a single waterfall on either bank.

Evening: The Shilka thus far promises to be much more picturesque than the Amur, the mountains higher and banks bolder. The river runs in a single course between high banks, the views are far-reaching and the mountains, though not grand, are beautiful.

Wednesday, July 24.—The scenery still continues pretty, but not what would be considered grand or magnificent.

Thursday, July 25.—Fenced land and here and there a good farm can be seen. We are evidently approaching a more settled country. The scenery has been good today, and all indications have been those of a good hill-farm section.

Friday, July 26.—Arrived at Stretensk at 12.30. It is a small place of

Immigrants Waiting for the Amur to Rise

two or three thousand people, and is the head of steamboat navigation. Pleasantly located, it has all the appearance of one of our frontier towns.

Saturday, July 27.—There was a sharp frost this morning. I am told that the thermometer shows 60 to 70 degrees below zero here in the winter. Left Stretensk by rail at 9.45 a. m.; have been riding all day up the valley of the Shilka and then the Ingoda. The views are very pretty, the country a superb one now; fine farms, excellent cattle and many of them, and good grazing. Everything looks like June here.

Sunday, July 28.—All day we have been passing through a fine country, with frequent villages, good-looking farms, and one city, Chita, a place of 22,000 people. Will enter the Yablonoi Mountains tonight.

Monday, July 29.—Weather very cold this morning. We are in the western foothills, and the water in the little river by the side of which the track runs is flowing westward to Lake Baikal. The soil is light and sandy, and the prevailing trees are pine. Later we come into the country of the Buriats, a pastoral people, formerly Mongols, with the Chinese features, queue, and dress, except that they wear round hats with turned-up brims. The country here is fine.

Tuesday, July 30.—Arrived at Lake Baikal. Weather rainy and lake rough. It is a large body of water, said to be about 50 miles wide and 400 miles long, and very deep, in some places 4,500 feet. As far as we could see, the shores are bold and rocky. Reached Irkutsk,

Milk and Bread Sellers on the Amur

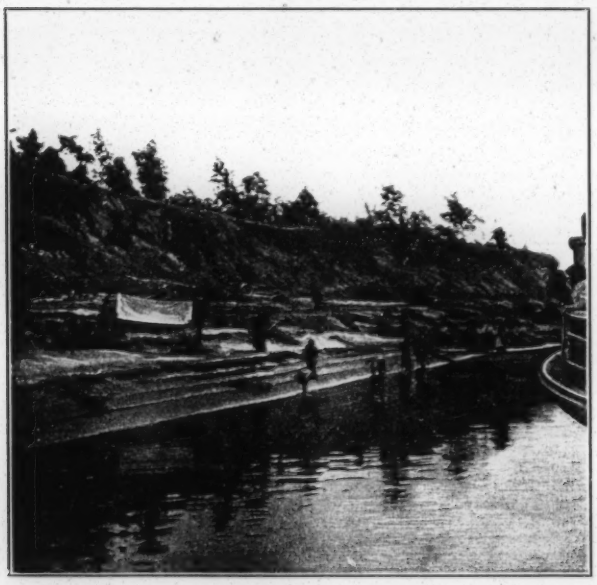
40 miles west of the lake, at 12 midnight. It is a city of 35,000 people. It is situated on both sides of the Angara River, which flows out of Lake Baikal, and apparently is in a flat country.

Friday, August 2.—Left Irkutsk at midnight.

Saturday, August 3.—We have been riding all day through a splendid prairie country with just grade enough for good drainage. White birch on both sides of the track and dense pine forests a little distance away. Here and there a small farm, now and then a river—the paradise of farmers and cattle-raisers. The forests are clean, no underbrush, but grass and ferns carpeting the ground under the trees.

Immigrants on the Amur

Sunday, August 4.—Country still continues fine. Undulating prairie as far as the eye can reach, with plenty of timber scattered about. I am surprised at the extent of cultivation out here and the frequency and size of towns. The soil seems very fertile, and grain looks well.



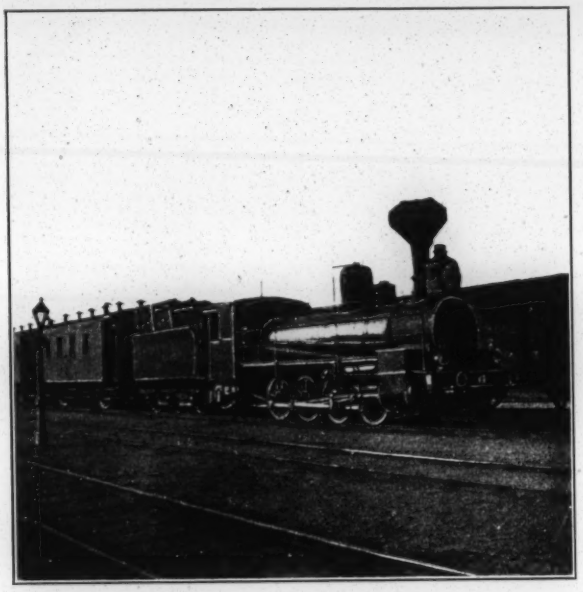
Bank of the Amur Showing the Fertile Soil

Monday, August 5.—Early this morning we came to Omsk, and, crossing a long bridge over the River Ob, we came into a flat prairie country. The soil is rich, the grass good; few trees, and these small, more like bushes. It is magnificent farm land. Every little while we see a herd of horses, cattle, and sheep grazing, and a Tatar boy sitting on horseback and keeping them together. The towns are larger than before, but less frequent. This is genuine prairie country.

Wednesday, August 7.—Same as yesterday, only apparently

more fertile. Not much cultivation but more grazing. This is the country of the Kirghiz. They are cattle-raisers. The prairie is splendid, as good as I ever saw. Lakes and large ponds abound, and in the absence of rivers receive the drainage.

Thursday, August 8.—Awakened this morning early by the tug of the cars on the upgrade, and, going out, found that we were climbing the eastern slope of the Ural Mountains. An occasional pretty view rewarded me for my early rising. The Urals here are about like the Berkshire Hills. Grass is cut almost to the top. The passage is not difficult. We are now in Europe, having passed the boundary post in the night. The Administrative boundary is some 200 miles eastward of Kurgan, where, officially, Siberia begins. All the morning we were running down the valleys, with an occasional pretty, far-reaching view. There is nothing specially attractive about the scenery. In the afternoon we came into a splendid farming country, with the peasant villages and large estates; splendid farms, wretched huts; wealth for the land-owner, misery and dire poverty for the land-worker. The density of population is much more apparent.



An Oil-burning Locomotive on the Siberian Railroad

Friday, August 9.—Today we are in a country of no wood. As far as the eye can reach, the steppe is brown and bare after the harvest. The villages are numerous, but so dry everywhere, and apparently dire poverty. The houses are hardly distinguishable from the grain stacks. Roofs of straw, and often mud walls, characterize the houses. Bricks of peat, piled in pyramids drying in the sun, constitute the fuel for the winter.

Noon.—Have just crossed the Volga, a magnificent river. Later we suddenly ran into a low, swampy section of country and at once splendid tall pine trees appeared and the rest of the day the woods prevailed.

Saturday, August 10.—Today the country is better and more diversified. Apparently few people live outside of the towns and peasant villages. Vast tracts are farmed, enormous herds of cattle roam the grazing land, but the man behind the hoe is in poverty and hunger.

We arrived at Moscow at 7 p. m.

RESOURCES AND DEVELOPMENT

Whatever I have given of description of Siberia may be applied in added degree to Manchuria, which is now and hereafter will be a part of Asiatic Russia. I say in added degree, because of its more southern location and consequent milder winter climate. Both countries possess a fertile soil, abundant

timber, navigable water-courses, coal, iron, copper, gold—indeed all of the resources which properly developed tend to make a nation great and prosperous.

Into and through such a country the Russian Empire has built a railroad which is as marvelous as the country through which it goes. Undoubtedly planned as a military road, its freight and passenger traffic has so enormously increased that there is no longer a question of its present and future financial success. From its beginning a steadily increasing tide of immigration has flowed into Siberia, not only by rail from central and northern European Russia, but by means of the Russian volunteer fleet through the Suez Canal and the Pacific ports until Vladivostok, which forty years ago consisted of four Chinese fishermen's huts, is now a flourishing city of fifty thousand souls, and Khabarovsk and Blagovestchensk are not far behind in wealth or population. At first a Cossack occupation at strategic points, then an assisted immigration of the former serfs, now an eager and enthusiastic search for wealth in the fertile soil and rich mineral resources of a new country. To each family moving into the Amur and maritime provinces an allotment of 269 acres of land is made, and into the central and western provinces forty acres for each male immigrant, with certain tax exemptions and lessening of military service in both cases. The fare to incoming settlers is preposterously low, being about twelve dollars for 4,500 miles.

At frequent intervals hospitals, barracks, and dining stations are erected, where medical attendance is given free, where children and sick persons are fed without charge and all others can purchase food at cost. Wherever they go, the fostering care of the government follows them. Loans of money and seed are made to the needy and deserving and government stores supply agricultural implements on the installment plan. Is it any wonder that Siberia is rapidly filling up with a strong, sturdy, vigorous population of independent Russian farmers, and that the brutish and cruel Cossack, who is regarded there somewhat as the Sioux Indian is on our own frontier, must look for other fields where his peculiar skill in fighting, plundering, and vodka drinking can be displayed?

A Business Corner in Stretensk

There is little doubt but that the Russian Empire will ultimately expend upon this stupendous enterprise at least $500,000,000, but it is building for the future, and is laying the foundations deep and strong.

REMINISCENCES OF TRAVEL

On the 28th of June, as I bade goodbye to Consul Harris in Nagasaki, he

Church at Stretensk.

said: "I will write a letter tonight and mail it to you at St. Petersburg, by way of San Francisco, New York, and London. I think it will go around the world and get there before you do." And it did, reaching St. Petersburg in 35 days, while it took me 40 days to get to Moscow.

My first stop was in Korea, a poverty-stricken land, which Russia and Japan, in eager rivalry, are attempting to exploit. In my judgment, it will ultimately be a province of Siberia, for islands do not annex continents permanently.

India and Canada do not disprove the rule; for, as we reckon the life of nations, British occupation of either is but temporary.

There is an opinion prevalent that the Philippines are a doorway into China, and that Manila is an *entrepôt* for Chinese trade. One might as well claim that Cuba or the Bahamas could control the commerce of the United States; for, barring the small percentage of Americans and Europeans in Manila, the industry, the enterprise, and indeed the capital is largely Chinese.

From Gensan, in Korea, we crossed the Japan Sea in a splendid subsidized Japanese steamer, with the most cosmopolitan company of passengers that I ever traveled with—a Turkish pasha and wife, two Mohammedan priests and their attendants, and English, Scotch, French, Danes, Japanese, Chinese, Koreans, Indians, Russians, Germans, and Americans.

We arrived in Vladivostok Tuesday evening, July 2. The harbor is a grand one, tremendously fortified from the outer approaches straight into and around the city itself. In many respects it resembles the Golden Gate at San Francisco, the Amur Bay reaching for many miles north and south behind the city.

Vladivostok is what its name implies, "The Capital of the Eastern Dominion," and a wonderful empire that dominion is sure to be. It is totally different from anything that I had seen elsewhere in the Orient. In place of mud huts and nipa-thatched shacks were three and four story brick and stone buildings, and instead of little brown specimens of humanity I found full-bearded, strong-limbed men and vigorous, rosy-cheeked women.

Vladivostok has every appearance of one of our western boomed cities in the very height of its prosperity. An extensive naval station is being established there. Large dry docks for the construction and repair of the fleets of the Pacific are being built. Its wharves were filled with shipping, and everybody seemed to be prosperous and full of business. New hotels, a new railroad station, extensive buildings for a new naval academy, and a college for the study of

Opera-House at Irkutsk

Oriental languages are all under construction, and its streets are being regraded and adapted to the city as it will be in the future. The city is built on the southern slope of a high bluff stretching around a branch of the harbor, which is appropriately named the Golden Horn. Good curbs and gutters in the main streets and plank sidewalks throughout the city manifest a proper public spirit, and a most excellent opera which we had the pleasure of attending proved that the esthetic side of life is not neglected. Indeed, as a people, the Russians are passionately fond of music. Few things are more inspiring than to see a Russian regiment march at swinging step to the music of their own songs, and I shall never forget the grand chorus of the evening prayers, in which the crew and passengers daily joined on the River Amur, or the glorious even-song of the choir of monks at the Alexander Monastery at St. Petersburg.

The wearing of a uniform is almost universal in Siberia, in civil as well as military life, and from the common laborer to the governor at least seven tenths of the men wear upon their cap or belt a badge which indicates their occupation, and respect is paid accordingly. Wherever the picture of the Emperor is seen, the cap must be doffed, and always in the presence of an *ikon* the cap removed and the sign of the cross made. The marvelous frequency of both of these objects, indoors as well as out, and the continuous bowing and posturing of the people becomes comical rather than serious to the stranger, and he wonders whether they are as pious and reverential as they seem.

I presume the governor in Vladivostok outranked the postmaster, but his epaulets were not so large nor his uniform so gorgeous. My first purchase in Siberia was a postage stamp, and living in a country where officials are public servants, and where postmasters take off their hats to the people, it seemed strange to me to stand with hat removed before a counter, behind which a man sat with his cap on, dressed like a major-general, and graciously consented to sell me one five-cent stamp, and I was then permitted to withdraw and recover when at the door.

But great as the postmaster is, he is nothing compared to the army officer. On one extremely hot day on the Amur a wealthy merchant was lying on a sofa in the cabin. He had removed his coat in order that he might enjoy a comfortable nap. A lieutenant in the army, traveling third-class as a deck passenger, happened to go by the door, and seeing him in his shirt sleeves, and just above his head a picture of the Emperor hanging on the wall, awoke him and ordered him to put on his coat in the presence of the Emperor. The man

objected, and appealed to the captain of the steamboat, but to no effect, for the captain decided that the order must be obeyed, although he admitted it was arbitrary and absurd.

There are times when a despotic government is a good thing, if you are "*it*," but one needs to be "*on the inside*" to enjoy it. When our passports were viséd at Tokio by the Russian ambassador, he sent back with them personal letters to each of the governors of the provinces through which we were to pass. On presenting the letter to General Tchitagoff, at Vladivostok, he at once told us that he would telegraph to Khabarovsk and have our rooms at the hotel and state-room on the steamer reserved, and also have the chief of police assist us while there.

Museum at Irkutsk

The traffic on the Amur under any conditions is enormous, but with navigation almost suspended by reason of very low water, both Stretensk and Khabarovsk had been crowded for weeks by passengers waiting to go up or down the river. We were told by others who had engaged rooms weeks ahead that no first-class accommodations could be secured, but we went on in faith and hope, and when the train stopped at Khabarovsk an inspector of the police met us, engaged our *hisvorshiks* or cabs, looked out for our baggage, escorted us to the best hotel, where excellent rooms had been secured, and advised us that a good state-room was reserved on the steamer for the next day. On the following day he came to the hotel, again cared for our baggage, escorted us to the boat and put us in a first-class state-room, and the gentleman who had so kindly advised us not to go went second-class. A call on General Grodekoff, at Khabarovsk, and presentation of our letter to him, secured the same attention, so that when we arrived at Blagovestchensk, at 11 o'clock at night and two days behind time, an inspector was there waiting for us at the wharf, our carriage was secured, and we were sent to the Grand Hotel, where excellent rooms had been engaged.

RUSSIAN COOKING

We had learned at Nagasaki that travelers through Russia must carry their bed-clothing with them, and had provided ourselves there with pillows, pillow cases, sheets, and blankets; but the hotel at Vladivostok and the dining car on the railroad to Khabarovsk thoroughly convinced us that Russian cooking did not appeal to Yankee appetites. The Siberians are good feeders and stiff drinkers, but vodka, which is principally alcohol, and quass, which is a red beer distilled from rye bread, and strong tea served five times a day and taken by the tumblerful as freely as water,

were none of them any use to me. For food, cabbage soup, flavored with onions and garnished with sour milk, was the principal dish, and, with black bread, was invariably served at noon and night. To one who neither ate nor drank any of these things the prospect did not appear hopeful or joyous; but we had been told of a Yankee from Maine who was the only man in Khabarovsk that could speak English, and, as good luck would have it, he was the manager of a large department store. There we outfitted for the campaign and laid in supplies of crackers, jams, and mineral water to last us through to Blagovestchensk, as we supposed.

When our steamer, the *Cæsarewitch*, started, she had two large steel freight barges in tow. The first night one ran into the bank.

Mohammedan Tatars at Taiga Railway Station Awaiting the Arrival of a Turkish Delegation

A Business Corner in the Heart of Siberia

The second one ran into the first, and its back was broken. It was abandoned, and on we went. The river is admirably lighted and buoyed, and great sums have been spent on its improvement; but, like the Mississippi, it is uncontrollable, having one channel today and another tomorrow. There was not a day when we did not run aground. We were due in Blagovestchensk in five days, and were provisioned for that time. On the fifth day meat and white bread gave out, and it meant cabbage soup or nothing. On the sixth day our boat, which drew four feet of water, stuck fast on a three-foot bar, and late in the day we transferred to a twenty-two-inch-draught, stern-wheel-working boat which had been sent to our assistance, and, taking off

all of the passengers it could carry, proceeded to Blagovestchensk.

"BENEVOLENT ASSIMILATION"

The city is on the north bank of the river. Just below and on the south bank *was* the Chinese city of Aigun. Two years ago it had twenty thousand population and there were three thousand Chinese in Blagovestchensk. When the Boxer troubles began and the railroad down into Manchuria was destroyed, the order came to General Gripsky to "fling the Chinese across the Amur." He tried it, but as the river is more than a mile wide there, it was impossible, and most of them never reached the other side. But the Cossacks went across, and today all that is left of Aigun could be put in a freight car. Not a house is standing, not a Chinaman remains. The gold mines up and down the river, all on the Manchurian side, are being worked by Russian soldiers. *All's quiet in Manchuria*, but a Russian gentleman told me that at Aigun alone ten thousand Chinese found a watery grave, and that the Cossacks on the Amur had been drinking vodka and living on the plunder from Manchuria ever since. That Manchuria has ceased to be Chinese and is thoroughly Russian now, there is no question whatever, and though the methods employed were awful, the results will in the end be better for Manchuria and the world, for Russian occupation certainly means progress.

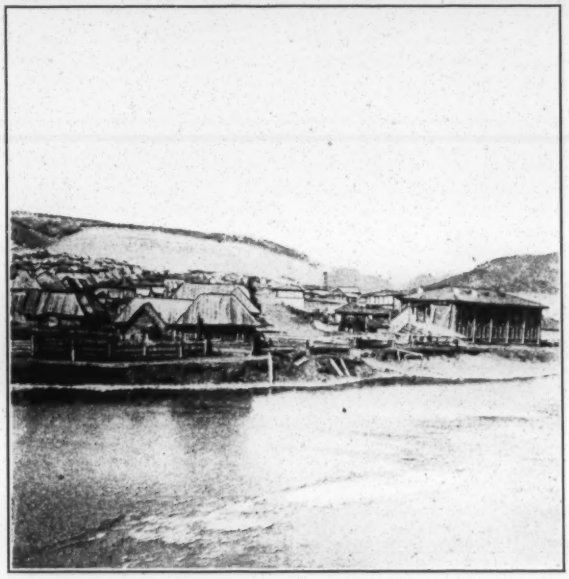
A European-Russian Village

LOW-WATER NAVIGATION

At Blagovestchensk we called on General Gripsky and were informed that as the water was still falling and the regular boats were unable to run, he had decided to send on the small working boat with the mails, and that we were welcome to such accommodations as there were upon it. He said we would have trouble, but that there was a possibility that we might get through. The alternative was to wait at Blagovestchensk until the water rose. After much consideration we decided to purchase our tickets and go forward, and the experiences of the following thirteen days will never be forgotten.

With no accommodations whatever for carrying passengers, the boat was so horribly overcrowded that there was hardly standing room, and at night both decks were an indistinguishable mass of heads and legs and arms. As first-class passengers, by courtesy we occupied the dining-room, a room about 10 by 12, just large enough for a table and seats on each side. A French captain slept on the table, the correspondent of the Paris *Morning Journal* slept under it, and my friend and I occupied the cush-

ioned benches on either side. When we left Blagovestchensk we were told that Senator Beveridge was a short distance up the river, and that we would pass his steamer the next day. We did pass it five days later, hard aground, but it was half a mile away from us, and we did not see him. Twice we ran on rocks and stove in the forward and after compartments. Supplies gave out, and cabbage soup and sour milk became a luxury. As we dragged our way along we found the Cossack towns had been foraged by the passengers on the stranded boats; but our captain bought two young cattle and killed them on the bank, and with potatoes from the fields and black bread bought from the peasants and wild strawberries for sauce, we came through alive, and reached Stretensk in thirteen days. We had made 1,442 miles in nineteen days. I can imagine that a trip across Siberia from west to east with high water in the Amur might be a pleasant one, but I cannot recommend the navigation of the river against the current in July or August.



A Siberian Village

INFORMATION FOR FUTURE TRAVELERS

On the Pacific division of the railway, 478 miles, the speed was 16 miles an hour, including stops. From Stretensk to Irkutsk, 747 miles, it was 12 miles an hour, but this includes the crossing of Lake Baikal and long delays at the custom-house. From Irkutsk to Moscow, a distance of 3,463 miles, the average speed was 18½ miles an hour, including stops. On this portion of the journey we took the French *train de luxe* and paid extra charges for "express speed," $6.48, and for use of car and bed-clothing, which is furnished on that train, $9.78.

The total time between Vladivostok and Moscow was thirty-eight days. I have recently received a letter from Mr. Penrose, of Philadelphia, in which he stated that he had made the Amur trip eastward the latter part of August, with high water, in eight days, against our nineteen, and that the whole journey was a most interesting and enjoyable one.

The Trans-Siberian Railroad is well constructed—in my judgment, much better than our transcontinental lines originally were. The rails are fifty-four pounds to the yard, and must ultimately be replaced by heavier ones. More than fourteen hundred wooden bridges are being changed as rapidly as possible to steel. The road-bed is well drained, and watchmen flag all trains its entire length. The cars, though built on the English plan of compartments, are equipped with vestibules and Westinghouse air-brakes, and are in every way as comfortable as ours.

The dining-car service compares as favorably with ours as the ordinary European hotel does with the American—no better and no worse.*

The trip is an exceedingly interesting and instructive one, and, so far as the railroad is concerned, can be made with entire comfort. With the Manchurian division open for traffic in another year, the "*round-the-world*" travel is sure to go that way, for climatic advantages, together with the saving of time and money, will give it undoubted preference over any other. At present a knowledge of the Russian or German language or the employment of an interpreter is almost necessary, but English is being spoken more and more, and will soon be the commercial language of the world. Indeed, the clerk at the leading hotel in Moscow told me that the great increase of American and English travel through Russia this year had compelled him either to learn the language or give up his place.

* For the benefit of prospective tourists I give the items of expense between Vladivostok and Moscow:

	R. K.
Hotel Vladivostok, one day	8.57
Fare, Vladivostok to Khabarovsk, 478 miles	17.05
Meals, Vladivostok to Khabarovsk, on train	4.00
Hotel at Khabarovsk, one day	9.80
Steamer fare to Blagovestchensk, say 500 miles	24.00
Board on steamer to Blagovestchensk	19.15
Extra baggage	1.68
Steamer fare to Stretensk, say 942 miles	30.00
Board to Stretensk	31.00
Hotel at Stretensk, one day	4.58
Railroad fare to Irkutsk, 747 miles	24.40
Extra baggage	5.40
Railroad fare to Moscow, 3,463 miles	63.50
Express speed ticket	12.60
Sleeping-car charges	18.90
Hotel at Irkutsk, three days	15.65
Extra baggage, Irkutsk to Moscow	16.13
	306.41
Equals United States money	$157.80
Meals, Irkutsk to Moscow, estimated	$25.00
Extra food on whole trip, with mineral water, and bed-clothing, estimated	38.00
Tips, fees, etc, as you please	00.00
Total 6,130 miles first-class, including hotels	$220.80

Fare alone *on train*, including sleeping-car, but no meals, including baggage for 4,688 miles, $81.34—1.74 cents per mile.

A Picture of a Chocolate Wrapper Found in a Peasant's Hut in the Heart of Siberia

The chocolate was made by a Russian firm. The use of President McKinley's picture and of the American flag to make the candy popular among themselves, illustrates the affection which the people of Siberia feel for William McKinley and the American people.

OUTLOOK IN THE ORIENT FOR AMERICAN TRADE

No American in making this trip can fail to be impressed with the wonderful possibilities of Siberia in its agricultural and mineral wealth, and, because of this, the splendid opening which it affords for the sale of American farming and mining machinery. Russians are farmers, not manufacturers, and, poor as the peasants are, one family in that climate will consume more of the world's manufactured products than a score of people of like occupations in the Philippines, India, or anywhere in the tropics, and I think I might truthfully add in China, Korea, or Japan.

The well-to-do Russians are lavish in their expenditure, fond of display, and extravagant in the gratification of their appetites and inclinations. They hold a genuine regard for our country and our people, and it is not a new development. When some of the nations of Europe threatened to combine against us in the Civil War, the Russian fleet sailed into the harbor of New York and her shotted guns silently, but effectively, proclaimed her sympathy. Later she transferred her possessions on this continent to us, and in the sale of Alaska for $7,200,000 put us into the greatest and most profitable real-estate transaction of modern times. Her climate, her soil, her geographical position on the world's map is like our own. Before we gave four million slaves their freedom and left them destitute, to fight their way in life, she emancipated twenty million serfs and is slowly but effectively providing them with homes.

No Monroe Doctrine disturbs our mutual relations or ever can, for her policy is as ours should be, to mind one's own business and say hands off to those nations which make war on other lands for trade expansion only.

She does not pretend to love us because she needs our help, for she has one hundred and forty million people and a land that is unconquerable, and even the Nihilist or revolutionist there is proud of it and would give his life with equal readiness either to better his home conditions or to defend his country from a foreign foe. Her government is despotic, I admit, but self-government is not a remedy for all ills. The world is moving on, and, if I am not mistaken, Russia will be no laggard in the race, for no abler man today controls the destiny of any people than Mr. De Witte, the Prime Minister at St. Petersburg.

We have not got to *make* a market there; it is already made. The Russian railroads are operated with American air brakes, steel barges and steamers from Pittsburg navigate the Amur, and American locomotives are waking Manchuria to new life. On the steamer which brought me to Vladivostok there were seven hundred tons of American farm implements destined for Siberia.

From Seattle and San Francisco to Vladivostok and Port Arthur we jointly own the right of way and can hold it against the world, and the distance across the Pacific is less than from the ports of any European rival.

We need have no anxiety about the trade of China. In due time it will be ours, if we can meet the competition of the world, no matter who controls the government or holds spheres of influence there.

England, France, and Germany are not exploiting China for our benefit, and the trade of Indian and Chinese ports, though nominally open to the world, has somehow been controlled by the dominating power.

In 1900 we sold to China and Hongkong $20,459,385 worth; Great Britain sold to China and Hongkong $41,806,033 worth, or twice as much as we did.

In 1900 we sold to British India and Ceylon $5,227,032 worth, while Great Britain sold to British India and Ceylon

$160,035,563 worth, or thirty-two times as much as we did.

During the same year we sold to Siberia $2,786,664 worth.

In other words, in 1900 we sold to 8,000,000 Russians in Siberia more than half as much as we sold to 300,000,000 people under British rule in India.

In other words, where India purchased American products to the amount of 1⅔ cents per capita, Siberia purchased 35 cents per capita. If this was the situation last year, what will it be in the years to come, with India dormant or dying and Siberia just stepping out into new national life.

The situation in Japan shows what the United States can do in the Far East in competition with other nations under equal conditions.

In 1890 Great Britain sold Japan merchandise to the amount of 26,619,102 yen; the United States sold 6,874,531 yen; Germany, 6,856,955 yen.

In 1900 the respective sales to Japan were: United Kingdom, 71,633,219 yen; United States, 62,761,196 yen; Germany, 29,199,605 yen.

Our exports to Asiatic Russia have been as follows for ten years past:

1891	$161,580
1892	120,200
1893	145,591
1894	163,855
1895	204,937
1896	568,002
1897	413,942
1898	618,015
1899	1,543,126
1900	3,050,102
1901, 10 months	779,839

or, on the basis of a year, $909,812, or a loss in a single year of more than two million dollars, or two-thirds of our entire trade there since the sugar-bounty decision was made by the board of appraisers in New York.

Our trade conditions in India should be a warning to us in dealing with the Chinese question.

Hon. George Curzon, in his "Problems of the Far East," says "that the commercial supremacy of Great Britain in the Far Eastern seas, though sharply assailed by an ever-increasing competition, has not as yet been seriously shaken. How vital is its maintenance, not merely for the sake of our empire, but for the sustenance of our people, no arguments are needed to prove. It is only in the East, and especially in the Far East, that we may still hope to keep and create open markets for British manufactures. Every port, every town, and every village that passes into French or Russian hands is an outlet lost to Manchester, Bradford, or Bombay."

Every word of this is literally and absolutely true. It is for themselves and not for us that European nations seek concessions and mark out spheres of influence. Each one pursues its own peculiar method, but the result is alike in all.

There is no sphere of influence for us there, and to look upon Manila as a base for Chinese trade is like chasing rainbows for a pot of gold, for commercial bases are not established six hundred miles at sea and where storage and reshipment charges would be more than the direct freight to the destined market. The integrity of China cannot be preserved by a protectorate of the Powers, and if it could the people of this country would not permit our government to be a partner in it. China must reform herself or go to pieces speedily.

My judgment is that her destiny is slow but sure absorption by Asiatic Russia, and that the world will be the gainer by the change.

Meanwhile our duty and our interest is to keep on terms of peace and amity with all, but to make alliances with none.

THE TEACHING OF GEOGRAPHY

By Ralph S. Tarr, Professor of Physical Geography in Cornell University

GEOGRAPHY has an important position as a fundamental branch of instruction in the schools. The length of time devoted to it would lead us to expect from it highly important results in mental discipline. Yet one is frequently hearing the statement made that geography instruction is woefully barren of educational results. This does not mean, of course, that there are not individuals who are securing the best results from geography work, but that, as a whole, the ends obtained are not of the kind that should be expected. There are evidently difficulties in the way of making geography work in the grades as successful in its results as it is certainly capable of being made. That the teachers are alive to this fact is evidenced by the numerous text-books that are appearing and by the activity of educational associations, which in almost every meeting discuss some phase of the problem of how to secure good results from geography instruction.

This activity of the teachers is a most hopeful sign; for "where there's a will there's a way." That it has accomplished results is evident to all who have given attention to the subject. The methods of teaching today are so far different from those of a quarter of a century ago that those of us who spent our time in memorizing lists of all the capes of eastern America, all the capitals of the states, etc., would scarcely recognize as the same subject geography taught in a modern class-room. There is surely progress; but much remains to be done.

NEED OF TEACHERS WITH BETTER TRAINING

In answering the question, "What is to be done?" I should say, first of all, have better teachers. That this statement may not be misunderstood, let me hasten to add that it is in no sense intended as a criticism of the teachers. As a body they are overworked and underpaid. They are trained to one line of teaching, and then, by the caprice of the superintendent, perhaps, given some new method—often a fad—of which so many pass over the educational world. They do their best, work hard—far harder in fact than they ought to be expected to work—and, in spite of tremendous difficulties, accomplish better results than can properly be expected of them, though less than the subject itself is capable of furnishing. The difficulty lies beyond the control of the teachers under existing circumstances, and its correction can come only very slowly. It is a consideration of this problem that I would, first of all, take up.

The teacher in the grades has as her primary work instruction in reading, writing, arithmetic, and *geography*. A training that will adapt a person thoroughly for the task of teaching the first three may fall far short of fitting her for a geography teacher; for to teach geography well requires knowledge, not necessarily profound, but nevertheless fairly thorough, upon a large range of topics. One must know enough geology to understand the physiography; enough physics to grasp the meaning of climatic

differences; enough history to appreciate the influence of history upon political geography, etc. In other words, geography has such varied relationships that the teacher who would teach it properly must have a broad range of information. Otherwise it is necessary to blindly follow the text-book, and this, unfortunately, is far too often done.

Then, too, the teacher must be well-balanced—not too easily led astray by passing fads which often appear so attractive. This presupposes sufficient appreciation of the subject and its possibilities to understand what is good and what is bad in method. Next to *knowing* something to teach, it is important to understand *how* to teach what one knows—what to include, what to omit, how to present difficult points, and how to secure training from the teaching—not merely of the memory, but of the powers of observation and deduction. I believe that I am not misstating the facts when I say that, while geography demands these powers from the teacher, it is possible to teach the other three subjects with much less training. Instead, therefore, of demanding from the teacher the knowledge and training which geography requires, a teacher is selected who is amply qualified for the other subjects, and then required to do the best she can with the difficult and complex subject of geography.

OPPORTUNITY FOR SECURING TRAINING

To secure better trained teachers, boards of education should be prepared to offer better compensation. Three or four hundred dollars is now commonly offered, and this surely cannot command highly trained teachers of geography.

Not only is it difficult to find well-prepared geography teachers because of the complexity of the subject and of the low compensation offered, but also because of the limited opportunity for securing proper training for such teaching. By far the greater number of grade teachers go no farther for their training than the high school, with possibly a year of two in a "training class" or as pupil teacher. No geography instruction is given them in the high school, and little that bears directly on geography, with the exception of some short courses in geology, physical geography, etc., which are often indifferently taught, and rarely so taught as to show their geographic significance. Thus the teacher of geography is, in a vast number of cases, selected from the ranks of those who had no further instruction in geography than that of the grammar school. In other words, the teacher must return to teach the subject with little more knowledge of it than the very pupils whom she teaches will possess when they go from under her instruction. It is not quite as bad as this, of course, for the teacher is more mature, better disciplined mentally, and, in the natural course of events, has obtained a broader range of information. But it is an anomalous condition, and, in view of the fact that so many teachers are supplied from the high school, there seems to be a demand that geography instruction be given in that school. There are other good reasons for believing that geography should be taught in the high school, but as these have no bearing on the present question they will not be considered.

Of the teachers who did not get their preparation solely from the home schools the great majority come from the normal school. The training there is decidedly better, and in some is excellent; but in far too many it is very far below the standard that should be set. I have visited one normal school (and understand that there are many quite like it) where the geography was taught by the teacher of English, while the science was all in the hands of one man, who, in spite of his marked ability,

was unable to do good work with any science, because he had to give short courses in nearly all — physics, chemistry, zoölogy, botany, geology, physical geography, and physiology. At the time of my visit he had just had his burden increased by the requirement to teach temperance physiology. Much attention is given in all normal schools to "method," and in many of them the students are given instruction in method without a knowledge of the subject in which the method is to be employed. The best preparation for method of teaching is a knowledge of the subject to be taught, and without that knowledge drill in method cannot produce much result. But one of the most hopeful features in the movement for better teaching of geography is the improvement of the last ten years in the normal schools. Those that are abreast of the times have provided special teachers of geography, and in many cases have provided trained geographers. Each year the list of such schools is increasing, and the effect of this advance must be felt in a decided improvement in the teaching of geography in the grades.

The gist of what I have said above is that the conditions of geography teaching are bad, but are improving in various directions. But the complexity of the subject, and the lack of facility for obtaining proper training in it, make it certain that for many years to come the teaching of geography will not be raised to the desired high standard unless there are several fundamental changes, of which the most important must be to provide for better training, to require it of applicants, and to pay them in proportion to the training demanded. Such changes can come only slowly; but in the meantime there are some simple reforms which, if introduced, would cause a very decided improvement in a very short time.

In the first place, the teachers of geography should be encouraged (or, better still, required) to put part of their summer in further study and preparation. The summer schools of many universities offer opportunity for such study in geography, or in allied subjects upon which much in geography is based. To encourage such attempts at improvement increases in salary should be given to those who show sufficient zeal and intelligence to put part of their summer in study. This method is already followed by some of our large cities and with most excellent results. It should be extended. A modification of this is to offer to some of the best teachers a sort of scholarship to pay the expenses of a summer, or even an academic year, at a university. Few investments of school money could be better made with promise of more far-reaching results. This method is followed in Indianapolis, where the funds were provided by a wealthy citizen. It is a unique form of bequest; but how could money be better used than to provide for an uplifting of the teacher who gives to children their early training, upon which so much of their future depends? Would that every city in the land had a Gregg fund similar to that in Indianapolis.

THE UTILIZATION OF SPECIALLY TRAINED TEACHERS

Improvement will come also when the school authorities recognize the fact that geography is a difficult and complex subject, requiring knowledge of a broad kind, and, for proper instruction, a talent in addition to mere knowledge. In every city there are some teachers who really know geography, who like it, and whose work is eminently successful; but these teachers are required to give most of their time to other subjects than geography. Why not make use of these special talents? Why not have specialization in the grades as in other schools. There are special drawing teachers and

music teachers because not all teachers can draw or sing. It is equally true that not all teachers can give instruction in geography; and while a teacher may be an excellent instructor in arithmetic, reading, and grammar, she may be a flat failure in geography. Let the school boards but recognize this fact and take for geography work those who are best qualified for it, and there would be an immediate advance in result that would be most gratifying, and that would lead toward constant improvement. I think no other reform in school work is now so seriously demanded as this simple one. There is no reason why the geography teacher should not handle the geography in every grade; in fact, there is every reason for believing that it would be better to have it done so than to have the children go from one type of teacher to another—good, bad, and indifferent. It would, to be sure, call for some rearrangement and reorganization, but nothing serious. Once this was started, the grade of geography teacher would improve, both by the necessity of specialization and by reason of the fact that, when a new teacher of geography was to be selected, inquiry would be made concerning her special fitness for that work—an inquiry not now commonly made.

Another improvement of almost equal importance to the one last proposed, though less feasible than that, because of the additional expense involved, is to have a geography specialist as supervisor in every city. I know of a man who is a specialist in geography, thoroughly competent to guide work of the best kind, who is teaching all the English, and nothing more, in the high school of the city, not because he prefers it, but because that was all that was open to him there. What an advantage it would be to that city if he were employed to guide and instruct the teachers, to outline a rational course, and to see that uniformly good work was done! Many cities have teachers competent to fill such a position, and the additional expense ought not to be considered when such important results are to be secured. It has often been found possible to provide for nature-study teachers. Why not also geography supervisors? If some of the educational conferences would turn their attention toward such practical needs as these, instead of devoting their time to pedagogical discussion, there would be more good accomplished, more speedy improvement in teaching, and less valuable time wasted.

NEED OF UNIVERSITY COURSES IN GEOGRAPHY

One more important change seems to me to be called for. In the United States there are now 10,000,000 children, more or less, being taught geography, and approximately 400,000 teachers engaged in teaching them. These teachers should receive better instruction. But where are they to turn? To the normal school? Then where is the normal school to turn for its teachers? Where, in this country, is an education in geography to be obtained? While there are institutions in which physical geography is well taught, or the pedagogy of geography, or commercial geography, there is not a single institution in America in which provision is made for adequate and well-rounded training in geography. It follows, then, that the would-be teacher of geography must either go abroad or else himself fill in the gaps in his training, after having obtained what he can from some institution in which a part of geography is taught.

Is it not an anomalous condition in our educational system that one of the oldest and most respected branches of learning, in which all our youth are instructed by tens of thousands of teachers, in a course covering at least five years of their lives, finds no place in our universities? One by one new

sciences have developed and found their way into the university curriculum; but the English-speaking people provide no place for the venerable geography, notwithstanding the fact that so much of their development has depended upon geographic knowledge. It is not because there is lack of interest in geography, for there are enough who are interested to form numerous societies with great influence. Our geographic magazines rank with the best scientific periodicals, which indicates that men are not merely members of the societies, but also workers in geography.

Doubtless investigation would reveal reasons why geography has been ruled out of the university while many really less important subjects have crept in; but no investigation can offer adequate reason why this condition should be allowed to continue. We need such instruction for many reasons; but, confining ourselves to the single purpose of this paper, we need it for the sake of the advancement of geographic instruction in the schools. There is an ever increasing demand for training in geography, for which no adequate provision is made. If only one of our large universities could set the example of establishing a *school of geography*, others would soon find it necessary to follow. Such a school should provide instruction in the various branches of geography and in the pedagogical aspect of the subject as well. It is quite useless to hope to see such a school established by the university, for the simple reason that every university has such demands upon its resources that a large, new department could not be provided unless it were absolutely necessary. For the establishment of such a school money must be specially provided. Is there not some one among the many who are interested in geography who will see the need of a school of geography and provide for its establishment? The founding of such a school will mark the beginning of a new era in the teaching of geography, as well as in other lines of geographical work.

NEED OF A PLAN FOR GEOGRAPHY STUDY IN THE SCHOOLS

While, according to my view, improvement in the treaching staff of the grades is the greatest present need of the schools, and has therefore been given first place in this article, I consider it highly important also that there should be some agreement as to *what* should be taught and *how* the subject-matter should be presented. By this I of course do not mean that there should be absolute uniformity, for there must always be much difference in detail, according to the individual and to the environment; but that there is a general feeling that something like a rational plan should be agreed upon and followed is indicated by the fact that the matter is every now and then made the subject of committee report and discussion at leading educational conferences. The diversity of the reports presented proves how difficult it is to find a plan acceptable to all, and the marked differences in the leading text-books points to the same conclusion.

This question is altogether too large a one for full discussion within the limits of a single short paper, and accordingly I shall confine myself to a mere statement of a few fundamental principles which I believe should govern all courses in geography in the grades.

There should be a well-matured plan so that the course should develop step by step—that is to say, the earlier lessons should form a foundation on which the later ones may be built. Unfortunately in many cases there seems to be no such provision, but instead, topic after topic is introduced with no previous foundation and no vital relationship between what precedes or follows. It is a mass of description and unrelated

fact. For example, the trade winds are described as parts of physical geography, and later, when their influence on rainfall or desert might be shown to explain striking features of geography, there is no such application made, and the pupil is allowed to go away with the knowledge of two sets of facts without any hint as to their connection. Glacial deposits are described, but little or no use of them is made in explaining industrial development in glaciated regions, etc.

THE ELEMENT OF INTEREST

The well-matured plan proposed should provide for the element of *interest*. By this it is not meant to make the course easy, nor to go outside for material just because it is interesting. There seems to be a feeling in some quarters that it is undignified and undesirable to provide for interest; but there could be no greater mistake than this. Where interest is not aroused, work becomes tedious, the mind readily tires of the task, and soon such a dislike for the subject is created that nothing is done except that which is required, and even this is done with little result. It was only yesterday that a young girl said to me, "I hate geography. I passed the regents' examination in it and now I am going to forget it just as fast as I can." This view is far too common, and it is not the child who is to blame for it; nor is it geography, but the method of teaching, which has failed in the fundamentally important point of arousing and maintaining interest.

Some try to provide interest by reading to the class, or by telling stories of school children in other lands, or of cannibal feasts, etc. The *attempt* is laudable, but the *method* is trivial and totally unnecessary. Interest can be provided without departing one step from a well-defined plan of scientific presentation, as I shall attempt to point out below. Once interest is aroused, the amount of work which it is possible to expect from the children increases many fold. It is the same as in more mature men, who, when interested in their life work, are able to work hard and with effect, while if not interested, their life is very apt to be a partial or complete failure. If the geography student has an interest in his work he will not merely learn his lessons well and remember what he has learned, but he will also be eager to learn more by reading and inquiry. These facts seem to me so evident that I would hesitate to dwell upon them so long if it were not that, strangely enough, there are those who do not seem to grasp the point.

Let me insist that the arousing of interest does not mean that the work be made easy. It *becomes* easy because of the interest; but with interest the child is even ready to learn the list of all the capes of Asia if the teacher sets it as a task. Memorizing, observation, reasoning, inquiry—all these are stimulated by the interest; and the benefits derived from the study, instead of being lessened by reason of interest, are greatly increased by it.

IMPORTANCE OF HOME GEOGRAPHY

In order to present the subject in such a way as to provide for a connection between topics and for the development of interest, and its maintenance, it seems to me that it is necessary to follow only a few very simple principles, provided, of course, the "teacher" is a *real* teacher. In the first place, there should be a proper foundation. To jump right into the wide world with children of eight or nine years is perfectly absurd, even if the teacher or geography writer may say, "Now, dear children, we will go over hill and mountain and sea to see what other dear children are doing," etc. They simply are not ready for such a journey, even though it is taken in baby talk. Much

of it is absolutely meaningless to them, because they lack experience; and before they can take it they must have a foundation. Next to the need of better teachers I should place the need of *a better basis upon which to study distant geography*. They must really know the meaning of mountain, valley, river, ocean, commerce, etc.; and they must understand what maps stand for before they can study intelligently about the Atlantic Ocean, Mississippi River, and Alps, and before they can understand why London is a great city and be able to locate it on the map and know what such a location really means.

Too much care and attention cannot be given to the building of this foundation. It is difficult to treat in a general way, and is therefore absent or poorly presented in almost all the text-books. It can be secured only by a study of the conditions surrounding the school and the intelligent use of the knowledge thus gained in application to more remote regions and conditions. Thus it is necessarily dependent upon environment; and what in detail is adapted to one environment is perhaps not available in another. Therefore only general rules can be laid down, and this is not the place for them; but that *home geography* should serve as the foundation for future geography study is absolutely certain. Yet how rarely it is done! In a city of 15,000 a few years ago I found a teacher giving a lesson on the Mississippi delta. I asked if any in the class had ever seen a delta, and no one had—not even the teacher. Yet the school was on a delta two miles long and half a mile wide. How much more the Mississippi delta would mean if these children had understood their own! And the same thing holds for quantities of other features. There is no school in the country that has not scores of geographic features available for use in building a foundation for geography study.

Nor does the study of the home surroundings merely serve in giving a preparation for future study; it also arouses interest. Geography is no longer a mere study of distant lands, for the home of the child is a part of it. The winds, rains, soils, rivers, railways, etc., are bound up in intimate connection with world phenomena. The pupil's home is but a part of a whole; and when he studies the whole he is constantly seeing its relation to the part which he knows so well.

There is so much of value to be gained from long and thorough study of the home, and from frequent use of these facts in later study, that I should like to see a full year, or even two, devoted to it; and when this is done provision should be made for frequent excursions, as the Swiss so effectively do. Will teachers and superintendents in America ever realize that a half day spent by the river or in the factory may be made of more educational value than tenfold as much time in the class-room? The nature-study idea is a move in the right direction; but it seems to me that far more good would come of it, and far more opportunity for its extension would be found, if it were *geographic nature study*—that is, study that not merely creates interest in surroundings, but in that particular class of surroundings which have a broad application to something. The same powers of observation could be developed and the same interest aroused with, in addition, a larger training in reasoning and an application to life work. Rain or wind offer as good an opportunity for nature study as a tree bud; a lake or stream as a tadpole; and the soil as a caterpillar. Zoölogists and botanists have developed nature study. Is there not some one ready and competent to present geographic nature study? It is needed.

THE PHYSIOGRAPHIC BASIS

Having a foundation resting on the appreciation of the home environment,

the future study should be related to this, partly to illuminate the subject and partly to maintain the interest. As new topics are presented there should be a *causal sequence;* and this seems to me to be one more fundamentally important principle in geography teaching. Instead of teaching unrelated facts there should always, where possible (and there is nearly always a possibility), be an attempt to show relation between cause and effect. If wheat in the Red River Valley is the topic, the reason why wheat is grown there should be shown; if the size of New York city is stated, it should be shown why it is so large; if the desert of Sahara is being described, there should be a reason apparent; if the marked colonial development of the British Empire is stated, reasons should be presented, etc. Here, again, the method proposed provides for interest and also makes certain a clearer understanding. Facts thus learned will be remembered and memory will not alone be exercised; for if the chain of thought is logical, as it must be if properly presented, a habit of logical thinking will be trained.

In geography there are several bases for a causal sequence, though by far the greater majority of facts which the children learn rest upon either the historical or the physiographic basis. It follows, therefore, that some attention must be given both to history and to physiography, not in either case for their own sake alone, but merely in so far as they are needed to understand the facts which general geography includes. I believe it to be as great a mistake to include too much physiography or meteorology as to include too much history or biology. Pure history or biology are, by common consent, excluded; and pure physiography, which is a branch of geology, should likewise be excluded; but for the purposes of general geography each of these subjects, and as many others as are necessary, may be drawn upon to the full extent that they may be needed to serve as a broad cause for a part of a geographic sequence—that is, in so far as they have a direct bearing on an interpretation of the relation of man to the earth, they may be introduced into general geography.

Of the several bases for causal sequence not one has so much importance as physiography. In the past this aspect has been greatly overlooked. At the present we are perhaps carrying it a little too far—at least many believe so—and for my part I agree with them; but that physiography is fundamentally important to a rational scientific study of geography, in which cause and effect are considered, no one whose opinion is worth hearing can now question. If we wish to understand the position and importance of San Francisco, Chicago, New York, Boston, Montreal, the British Isles, etc., we must know the physiographic facts. The application of physiography is well-nigh universal. Its introduction, therefore, makes the study of geography rational and scientific, and, if not carried too far, it makes the study interesting, because it shows how, from certain causes, important results necessarily follow. If merely introduced and not applied, as it is in some of the texts, it not only loses its value, but it is positively dangerous, because it deadens interest and repels students. A reaction against physiography has already set in among teachers because of this fact.

TEXT-BOOKS IN GEOGRAPHY STUDY

It would easily be possible to follow this subject much further, and to enter into many details not here referred to. But this is not the place for that. Elsewhere, in a series of text-books, I have, in association with another, endeavored to work out in detail a system of geography for the schools, in which the

main underlying principles are those set forth above. My final point is that it is by such practical expositions as the preparation of text-books that we are to gain much of our advance in geography instruction. Much time is wasted in committee reports and association discussions of geography courses. These presuppose that teachers can fill in the gaps, which in nine cases out of ten is an unwarranted assumption. Let us have more text-books, each embodying the ideas of its writer. Each good text-book will improve the teaching, partly by its own use and partly by forcing competing publishers to try to equal or excel it. Out of these books in time will come one which approaches the ideal; for each good new book makes it easier to write a better one partly by showing what is weak and partly by reason of the strong points which it contains. We need more geographies and each good one that appears should be welcomed as a step toward attaining better results.

I dwell upon text-books with full knowledge of the fact that there are dreamers who believe the text-book to be bad, who think teachers do not need these helps, and who say that to tell a teacher how to teach, or to give questions and suggestions, is "an insult." The teacher needs all the help she can get; would that it were different, but it is not, and teachers know it and admit it and are doing their best to advance under difficulties. It is better to use the poorest of text-books than to follow the plan of teaching without one, for the latter method leaves many loose ends. It is the introduction of the "college idea" into the grades. It is coming to be believed by many that the lecture system is overdone in colleges where specialists are employed. What a result, then, must be obtained where the hearers are mere children and the teachers by no means specialists! Far better is it to use a text, and then, if the teacher has the ability and knowledge, to add to it where it is weak or where she is strong—that is to say, have a skeleton to build on. There are in every text-book some things said better than most teachers can say them, and these statements are in print, not taken down as notes with a part lost.

If the teacher can find time for extra work, it would be far better to use that time in laboratory work, using this term to include also a study outside of the school-room. Here is a chance to do something that no text can provide and whose results are of exceeding importance. The value of this work as preliminary and basal has already been mentioned when speaking of home geography; but it should be continued throughout the course. I do not speak of it further here, partly because it has already been pointed to with more or less fullness by others on various occasions, and partly because I believe that there are other lines of improvement of more fundamental importance than this, and much more liable to be adopted, because the way to their adoption is already open. Laboratory work means time, equipment, and training not now generally available. It is better to try to get it started where most needed, namely, in the very earliest years; and from this as a nucleus it will spread to the higher grades, when once its value is established there.

SUMMARY

Briefly summarized, the points made in this article are that there is an opportunity for improvement in geography instruction along several lines. First of all, there is need for better training of teachers, and this calls for geography courses in the high schools, better teaching in the normal schools, and provision for training of geographers in the universities; but by making a better use of the talent already available—that is, by

having geography supervisors in the cities, and by having the teachers who are best prepared for it take all the geography work, or all the arithmetic, etc., instead of spreading themselves over all subjects, an immediate improvement may take place; for in the grades there are already large numbers of teachers who are well prepared for the position of geography teachers, or who could quickly become so if they were given a chance to specialize. Immediate improvement may also be expected if teachers are encouraged to take advantage of the opportunities open to them in the numerous summer schools.

As to method, there should certainly be teaching in home geography, and this should involve laboratory and out-of-door work. A well-defined plan of instruction, in which home experiences and the physiographic and historic basis are made use of in the development of causal sequence, should also be followed; and through it all there should be no time when the element of interest is not present. For the betterment of geography instruction we need more textbooks of good quality, and, as time proceeds, there should be more and more laboratory work provided.

Already much progress has been made and each year shows a greater measure of advance; but there is much still to be desired, and, as I view the problem, the above-mentioned lines are the ones along which there is the greatest present need of improvement. They are all feasible, and none of them call for any very serious change in conditions. Agreement upon them is desirable, and a will to move along these lines would in very short time succeed in revolutionizing geography teaching and in making this instruction effective where now in so many cases it is ineffective, and in some cases even producing evil results through misinstruction.

THE LATEST ROUTE PROPOSED FOR THE ISTHMIAN CANAL—MANDINGO ROUTE

GREAT interest has been aroused during the past few weeks in the new route proposed for the Isthmian canal. If all that the sponsors for the route, the American Isthmus Ship Canal Company, claim and believe should prove to be correct, they have undoubtedly discovered a waterway that eclipses the Panama and Nicaragua routes in every respect.

The new route, called the Mandingo route, is some forty miles south of the Panama Canal. It starts from the Mandingo Bay, in the Gulf of San Blas, tunnels through the Cordillera for about five miles, and then cuts through hard rock, level country for about 20 miles, straight to the Bay of Panama. In certain respects the Mandingo route coincides with the San Blas route, from the Harbor of San Blas to the mouth of the Rio Chepo, on the Pacific, which was advocated several decades ago. It differs, however, from all the so-called Darien routes previously urged in that it makes use of no stream or lake, but is a direct cut from ocean to ocean. There is a deep, protected natural harbor at either end of the line, which is straight as a rod; not a single lock would be required, and the canal, the company state, for the entire distance would be cut in hard rock instead of in mud and sand and swamp. The one engineering problem, a tunnel five miles long, 202 feet high and about 200 feet wide, the company claim competent American engineers and contractors are

willing to undertake and construct at such a moderate cost that the entire expense of the canal would be less than by either the Panama or Nicaragua route. Electric lights would make the tunnel bright as day, deep shafts would ventilate it, and an electric trolley pull the vessels back and forth.

The company proposes to build the canal without financial assistance from the United States Government further than a guarantee of its bonds as the work progresses. In return for this guarantee the United States is to have free transit for all warships for 100 years.

The company has not obtained any concession from the Colombian Government, as the Panama concession does not expire until 1910. The matter of a concession is, however, for the present, immaterial. The great question is, which is the best and most enduring route. When the route has been found that possesses the greatest certainty of keeping open at all times and for all time, the matter of a concession can be arranged.

General E. W. Serrell, the consulting engineer of the company, and the man who has planned this Mandingo route, has been a famous engineer for half a century. In 1848 he was assistant engineer to the Panama Survey; in 1850, the chief engineer in the construction of the Niagara bridge; later he was the chief engineer in the construction of the Hoosac tunnel, and he has been associated with many other great public works.

The American Isthmus Ship Canal Company has issued a preliminary statement setting forth their arguments in favor of the Mandingo route. Practically their entire statement is printed below. It is so positive that it deserves most careful consideration. The map that follows the statement is a copy of the map prepared by the company to accompany the statement.

STATEMENT OF AMERICAN ISTHMUS SHIP CANAL COMPANY CONCERNING PROPOSED MANDINGO ROUTE.

"The American Isthmus Ship Canal Company, incorporated under the laws of the State of New Jersey on the 30th day of June, 1899, proposes to construct and operate a tide-water sea-level ship canal across the Isthmus of Darien, in the Mandingo country, a straight line, without locks or tide-gates, 29½ miles long, from a good harbor in the Gulf of San Blas, on the Atlantic side, nearly south, to a good harbor back of the Pearl Islands on the Pacific side.

"Having completed its preliminary work, this company now proposes to show that its enterprise is the ideal canal. . . . It proposes to build and operate the canal itself, under proper supervision, however, of the United States Government.

"It asks no appropriation from the Congress. It seeks to take no dollar from the public funds. It asks that the United States Government shall guarantee its bonds, in principal and interest, as the property acquired and work done under government supervision justifies, and it offers as an equivalent for such guarantee free transit for vessels belonging to the United States through its canal for one hundred years. . . .

"The various proposed lines may be generally classified in two groups—first, sea-level tide-water canals; second, canals depending upon impounded water, with locks and tide-gates.

"The advantages of the former are manifest and scarcely need enumeration, while the disadvantages of the latter, both in construction and operation, are equally beyond discussion. It is only necessary to refer to the successive reports of the commissions of recent years to clearly see this point. To depend upon rain water impounded by dams, in a country where every rain-

storm is almost a cloudburst, and is therefore a grave danger to the dam which is expected to contain it, is not desirable. To operate great ships through tortuous channels, to lift them up and down by gigantic locks, would, if inevitable, be a most pitiful solution for 20th century science to give to a problem so long discussed and so vitally important. But, if avoidable, such a choice is not a solution of the problem and leaves it open for a better answer.

"The report of the Isthmian Canal Commission, just submitted, indeed recommends the adoption of the Nicaragua route, but purely as a choice of evils. It admits all that has been said above in regard to the fundamental principles that underlie this discussion. There can be no doubt that the Commission would have welcomed a straight waterway, without locks or tide-gates as the solution of this question, and have eliminated immediately from the discussion any canal with impounded water and locks, if such a line had been before them.

"It will naturally be asked, then, how such a line came to be overlooked, for a route in the San Blas region is not a new thought. That such a line offered the shortest distance between the oceans, that it possessed perfect natural harbors, that it could be made at sea-level, were facts within the knowledge of the Commission, and a reference to their report will show a description of such a line and a discussion of its merits. It will there be seen that the Commission preferred both the Nicaragua and Panama locations, considering the tunnel of San Blas more objectionable than the complicated system of locks and tide-gates, dams and lakes, of Nicaragua and Panama. The Commission, however, made the line they illustrate in valley locations, necessarily involving curves and radically objectionable from our point of view, in a country of violent rainstorms, while their tunnel, both in design and cost, is far inferior to the Mandingo tunnel, which we advocate and which we claim to be the ideal solution of the canal problem.

"It will be asked why the American Isthmus Ship Canal Company did not bring its line to the attention of the Commission.

"The answer is, first, the Commission was appointed to discover and describe a canal route to be owned and operated by the Government of the United States. This was not and is not our purpose.

"Second, and far more important, is the fact that not until the deliberations of the Commission were practically closed had we completely located our straight line and demonstrated to ourselves and to the eminent scientific gentlemen whom we consulted the feasibility and economy of our tunnel plans.

"When this point had been reached we laid the matter before the President of the United States, who referred it to the Commission; whereupon we sought and obtained an interview with Rear Admiral Walker, the president of the Commission, who, together with Professor Burr, expert engineering member of the Commission, saw our plans, maps, and drawings, and desired that they be exhibited to Mr. Morison, who was charged by the Commission with the investigation of the group of projected routes, of which ours is one. Mr. Morison, up to the present time, however, has not found it convenient to call upon us. We are confident that when Mr. Morison shall have seen our plans and communicated with his colleagues the Commission will make a supplementary report to Congress which will clear away any doubt as to the preference due to our canal.

"It must be already apparent, from the facts above stated and from the report of the Commission, that the only point in our plans open to discussion is the tunnel. But does the tunnel really present an objection to modern science and

to present mechanical devices, whatever may have been the case at an earlier period of the inquiry? The answer is most emphatically, No.

"By existing appliances, by means of machinery now in the market and in successful operation, this tunnel can be quickly and economically built, and with certainty and safety economically operated. It is a work, says an eminent authority, 'not of difficulty, but of magnitude,' and when it is recollected that its magnitude is insignificant as compared with the engineering work involved in its competitors, it will, we think, be apparent that the tunnel is no real objection to the line.

"We have exhibited our studies for this tunnel to eminent engineers and have received the most flattering indorsement, which will in due time be made public, and we shall show that experienced and responsible contractors are willing to build our canal within our estimates, and to give satisfactory bonds to that effect.

"We are of opinion that, although full faith and credit should be given to the opinions of competent engineers, the cost of an enterprise can never be certainly fixed until responsible contractors have named the price at which they will undertake it.

"The following are the points upon which the Mandingo route depends for your approval:

"*First.* Its length is but 29½ miles.

"*Second.* It is a perfectly straight line from ocean to ocean.

"*Third* It possesses perfect natural harbors, large enough and deep enough for commerce.

"*Fourth.* It has no locks nor tide-gates nor dams, but is essentially a part of the water system of the world, where shipping can pass without hindrance or delay.

"*Fifth.* It does not depend upon impounded water, with all the contingencies involved in such dependence, but becomes, on the contrary, from the moment of its completion a portion of the ocean.

"*Sixth.* It can be constructed, ready for operation, in not more than three years.

"*Seventh.* Its capacity, under all conditions of tide and weather, allows the passage of 288 ships per day under a headway of one mile.

"*Eighth.* Electric trolleys will propel shipping through the canal with certainty, regularity, and safety.

"*Ninth.* The time of transit for steamships under their own steam in the open cuts and by trolley through the tunnel will be three and a half hours; for ships not using their own motive power the time by trolley towage will be five hours.

"*Tenth.* The distance to and from all South Pacific ports is shorter and the time needed less. To all North Pacific and insular ports the certainty and rapidity of transit will give it a time advantage which more than balances its slight disadvantage in distance.

"*Finally.* The American Isthmus Ship Canal Company asks no money from the Treasury of the United States. It proposes to give to the commerce of the world ideal transit from ocean to ocean at a moderate and just price, and to the Government of the United States in exchange for the guarantee of its bonds free transit for one hundred years for the national ships.

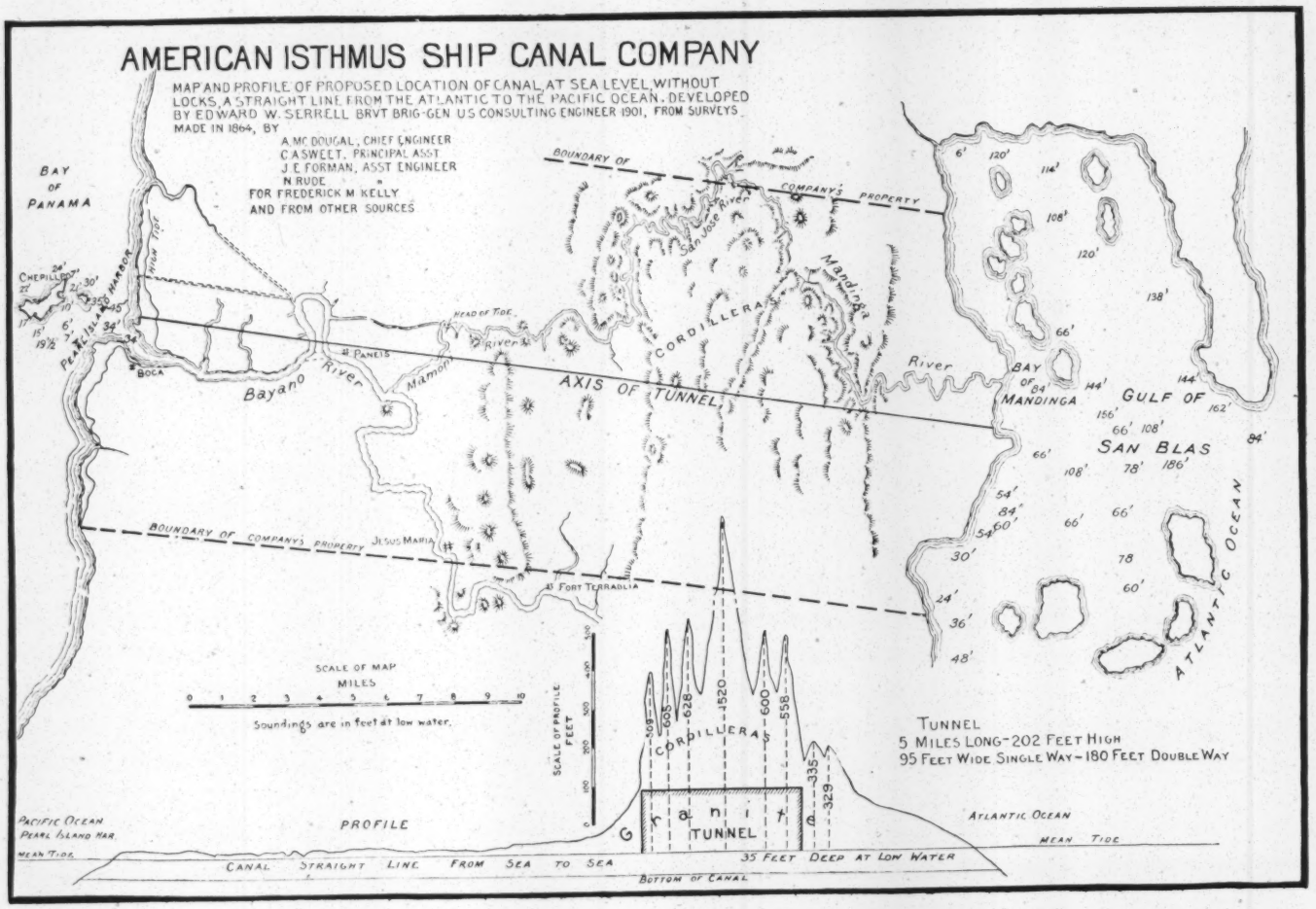
"By examining the following tabular statement the points of difference between the Mandingo and the Nicaragua and the Panama lines are readily measured.

TABULAR STATEMENT PREPARED BY AMERICAN ISTHMUS SHIP CANAL COMPANY

	MANDINGO.
Length of Canals.	29½ Miles.
Curves and Courses.	The Mandingo is a perfectly straight line at the narrowest part of the Isthmus, and normal to the coast.
Terminal Harbors.	Perfect natural harbors at both ends, large enough and deep enough for the greatest demands of commerce.
Locks and Gates and Dams.	A sea-level canal without locks or tide gates, essentially a portion of the ocean, where shipping can pass without hindrance or delay.
Water Supply.	The united waters of the Atlantic and Pacific Oceans.
Time of Construction.	Can be done in three years.
Capacity of Canals.	Under all conditions of tide and weather, 288 ships per day with a headway of one mile.
Method of Transit.	Electric trolley, controlling absolutely the movement of ships.
Time of Transit.	Five hours for sailing ships and others by trolley towage; exceptionally, steamers by their own power might go through in 3 hours.
Distance from Ports in the United States.	From all Atlantic and Gulf ports to all South Pacific ports, a considerable gain, both as to distance and time. To all North Pacific and insular ports, a valuable gain in time.
Incidents of Traffic and Maintenance.	Transit presents no dangers of collision, on account of trolley control; has little machinery to be deranged, and no delays from curvature or locks; therefore transit can be counted upon absolutely at any time.
Permanence of Waterway.	Constructed practically through primitive rock, banks will not wash and there can be no silting. Destructive earthquakes are unknown.
Financial.	The American Isthmus Ship Canal Company asks no money from the United States Treasury. It proposes to build the canal itself, asking the United States Government to guarantee its bonds in exchange for free transit for 100 years for the national ships.

SHOWING DIFFERENCE BETWEEN NICARAGUA, PANAMA, AND MANDINGO ROUTES

PANAMA.	NICARAGUA.
49.09 Miles.	183.66 Miles.
771° 39′ of curvature, 29 curves, in all 22.85 miles of curves. This curvature equals 46.54 per cent of the entire length of route. The line crosses the Chagres River 28 times.	2339° 50′ of curvature, 56 curves, in all 49.29 miles of curves. This curvature equals 26.83 per cent of the entire length of route.
Good harbor at Panama, but not so good at Colon, while at the latter place sailing vessels are often embarrassed by northers and at Panama by calms.	No harbor at all at either end. It would be necessary to make artificial harbors at an enormous expense, which, when made, would be costly and difficult to maintain.
A complicated system of locks, with a total lift of 92 feet. Many dams of large extent and doubtful maintenance: Normal lift, 85 feet; maximum lift, 92 feet.	A complicated system of locks and tide-gates, with a maximum lift of 112 feet. Many dams of large extent and doubtful maintenance.
Rain water impounded by dams in lakes, with all the contingencies of deficient rainfall or excessive rainfall. The rains are so sudden and violent that the construction of permanent and satisfactory basins must be a feat of the utmost doubt and difficulty.	The same difficulties exist at Nicaragua as at Panama, increased, however, by the greater length of the waterway, demanding a greater supply of impounded water.
Eight or ten years.	As estimated by the Canal Commission, 8 years; by others, 15 to 20 years.
In both the Panama and Nicaragua Canals, transit of any ships at all depends upon rainfall and success in saving it. If water be plenty and locks work perfectly, 24 to 26 ships per day might go through.	
No method of propulsion being proposed for either of these canals, an expensive system of tugboats would seem to be required, or steamships by their own power.	
Uncertain. If there be enough water, and locks and machinery act properly, it is possible that the time named by the Commission, 11½ hours, may be realized, but for delay where towing is needed and for difficulty with locks, a liberal allowance should be made. M. Choron, chief engineer of the New Panama Canal Company, estimates 15 hours as a minimum.	Most favorable conditions as to water supply and machinery might realize the estimate of 33 hours, but allowances must be made for detention at curves and for delay caused by imperfect action of locks.
Suffers but slightly in comparison with Mandingo if delay from water supply and uncertainty of locks be eliminated.	To South Pacific ports far behind both the others as to both time and distance. To North Pacific ports an advantage in distance which is more than balanced by the difference in time of transit.
No certainty of transit can be depended upon as to fact or time, since all machinery is liable to become deranged, and it is not improbable that the line will be impassable from this reason for greater or less periods. The expense of maintenance of machinery must be very great.	The same must be said of Nicaragua as of Panama, and to this must be added the expense and difficulty of maintaining the artificial harbors. Storms upon Lake Nicaragua are frequent.
Very much of the line must be dug through mud and sand, which will have to be kept dredged at a continual expense, interfering with mercantile traffic and increasing cost of maintenance, while the danger of a broken dam, with all its fearful consequences, can never be absent.	The Preliminary Report of the Isthmian Canal Commission shows some of the dangers to the permanence of this waterway, where "the canal line passes over swampy sections." Again, we have the fearful risk of dams, and finally the Nicaragua location experiences frequent and severe seismic disturbances.
If this line is adopted the rights of the several French corporations, together with their concessionary complications in Colombia, must be determined accurately (a work of no little time and difficulty), and such rights and concessions paid for, at a cost of $40,000,000, as estimated by the Commission, and $144,000,000 more of public money spent to finish the canal, which estimate is considered by many authorities much too low.	Here the government must expend, according to the estimate of the Commission, upwards of $189,000,000, raised by taxation, while other authorities maintain that the ultimate expense will be much greater.


AMERICAN ISTHMUS SHIP CANAL COMPANY
MAP AND PROFILE OF PROPOSED LOCATION OF CANAL AT SEA LEVEL WITHOUT LOCKS, A STRAIGHT LINE FROM THE ATLANTIC TO THE PACIFIC OCEAN. DEVELOPED BY EDWARD W. SERRELL BRVT BRIG-GEN U.S. CONSULTING ENGINEER 1901, FROM SURVEYS MADE IN 1864, BY
A. MC DOUGAL, CHIEF ENGINEER
C.A. SWEET, PRINCIPAL ASST.
J.E. FORMAN, ASST ENGINEER
N. RUDE "
FOR FREDERICK M. KELLY
AND FROM OTHER SOURCES
BAY OF PANAMA
BOUNDARY OF COMPANY'S PROPERTY
San José River
Mandinga River
CORDILLERA
HEAD OF TIDE
HIGH TIDE
CHEPILLO
PEARL ISLAND HARBOR
BOCA
Bayano River
Mamoni River
AXIS OF TUNNEL
BAY OF MANDINGA
GULF OF SAN BLAS
ATLANTIC OCEAN
BOUNDARY OF COMPANY'S PROPERTY
JESUS MARIA
FORT TERRABLA
SCALE OF MAP MILES
0 1 2 3 4 5 6 7 8 9 10
Soundings are in feet at low water.
SCALE OF PROFILE FEET
TUNNEL
5 MILES LONG - 202 FEET HIGH
95 FEET WIDE SINGLE WAY - 180 FEET DOUBLE WAY
PROFILE
PACIFIC OCEAN
PEARL ISLAND HAR.
MEAN TIDE
CANAL STRAIGHT LINE FROM SEA TO SEA
35 FEET DEEP AT LOW WATER
BOTTOM OF CANAL
ATLANTIC OCEAN
MEAN TIDE
CORDILLERA
TUNNEL
509
605
628
1520
600
558
335
329

GEOGRAPHIC NOTES

INTERSTATE MIGRATION

AT least one person in every five native-born Americans is living in a state other than that in which he was born—a striking instance of the mobility of the people of the United States. The native population of the United States, according to the last census, was 65,843,302, of whom more than one-fifth, or 21.3 per cent, were living in adopted states.

It is interesting to note the number of sons and daughters which the different states have sent out. New York has sent out more than 1,300,000, Pennsylvania nearly 1,000,000, Ohio more than 1,100,000, Illinois over 1,000,000, and Indiana, Iowa, Kentucky, Missouri, Tennessee, and Virginia, over half a million each. Proportionally to her population, Vermont has given to her sister states more than any other member of the Union. Vermonters equaling in numbers nearly one-half of the present native population of the state are now living in other states. Virginia, Vermont, New Hampshire, Nevada, Maine, and Delaware have each sent out numbers equaling about one-third their present native population.

Numerically Illinois has received more citizens from other states than any other member of the Union—nearly a million; 855,000 have entered Missouri, 838,000 Texas, and over half a million New York and Ohio. The states that show a net gain from this intermigration are Massachusetts, Rhode Island, and Connecticut of the New England States, New Jersey, West Virginia, and Florida of the Atlantic Coast States. The other New England States and New York, Pennsylvania, and all the Southern States as far as Mississippi have suffered net losses. For instance, New York has had a net loss of 666,000, Ohio 612,000, and Virginia 455,422. Indiana, Illinois, Wisconsin, and Missouri, the great states of the middle West, have each experienced considerable net losses, while Michigan, Minnesota, Iowa, Arkansas, Louisiana, and all the states west of the Pacific coast have made gains. Texas has gained the most of all—629,000. Kansas comes next, with a gain of 422,000, and California third, with 364,000.

U. S. WEATHER BUREAU

THE United States Government spends annually somewhat over one million dollars on its weather service. In return it is estimated by conservative financial interests at least twenty million dollars are saved annually to the people of the country by the advance storm warnings to shipping along the Atlantic and Pacific coasts and by flood warnings to the people living on the banks of our great rivers. Such an investment, annually yielding an income twenty times the principal, or, in other words, which pays yearly dividends of 2,000 per cent, is somewhat rare.

The last annual report of the Chief of the Weather Bureau, Prof. Willis L. Moore, describes the work of the Bureau during 1900–1901. In addition to the weather forecasts, the Bureau is carrying on extensive work in many other lines. Snow bulletins, issued in the Rocky Mountain region, give complete information as to the depth and character of the snowfall in the mountains—information that bears on the probable water supply for irrigation during the summer. Experiments are being made in wireless telegraphy; the revision of the barometric system for the United States, Canada, and West Indies has been practically completed under the direction of Prof. F. H. Bigelow; the

climate and crop service has been extended; 60 new storm-warning towers have been erected along the Atlantic coast. The professors and officers of the Weather Service are also doing important work in promoting interest in the study of meteorology by giving lectures before the schools and universities of the country.

TWO FAMOUS MAPS OF AMERICA

THE oldest map on which the name America appears, and the first large map to show the Columbian discoveries, has recently been found in Germany. The map was made in the first years of the 16th century, by the famous German cartographer, Martin Waldseemüller, and given to the world in 1507. To accompany the map, Waldseemüller published at the same time a brief treatise in Latin, entitled "Cosmographiæ Introductio," accompanied by an appendix containing translations of the letters of Amerigo Vespucci. It was in this work that Waldseemüller proposed to call the new world after Amerigo, evidently believing that Amerigo was its discoverer. The suggestion was adopted, and first the southern continent and later the entire western hemisphere was called after him. A few copies of the treatise are still extant, several being in American libraries, but the map, though fully 1,000 copies were printed, soon disappeared, and one copy has only just now been accidentally discovered in the library of Prince Waldbourg, at Wolfgegg Castle in Würtemburg.

Several years after the publication of this map Waldseemüller learned of his error in crowning Amerigo Vespucci as the discoverer of America and on his later maps omitted the name "America." But the thousand copies of his first great map had been scattered throughout Europe, so that the name had become too firmly rooted to be displaced. A copy of one of these later maps, printed in 1516, on which the name America does not appear, and which had likewise utterly disappeared, was found in Prince Waldbourg's library at the same time. On this map, for the name "America" is substituted the name "Brazilia sive Terra Papagalli" (the land of parrots).

The maps are wood-cut engravings. Each is made of twelve sheets, to be pasted in three rows, four sheets in each row. Waldseemüller probably intended them for wall maps, which helped moisture and time to make away with the copies. The sheets of the maps found in Prince Waldbourg's library had been bound in a large folio volume, which protected them from the ravages of dust and decay.

It will not be long before Americans will see a facsimile reproduction of the maps. The fortunate finder, Prof. P. J. Fischer, and Dr. Von Wieser, a distinguished German geographer, who had for years been hunting unsuccessfully for the maps, are hastening to reproduce them in facsimile.

THE DANISH WEST INDIES

THE three islands of the Danish West Indies combined are about twice the size of the District of Columbia. Thirty-five years ago Denmark offered to sell them for $15,000,000, but finally accepted Secretary Seward's offer of one-half that sum. Secretary Seward, however, did not have his way with the United States Senate, and the islands remained in Denmark's possession. Now Denmark is willing to sell them for $4,500,000. The story of these figures tells not only the value of the islands to Denmark, but also is an index of their present condition.

St. Thomas, the smallest and most populous of the three, has the best harbor, Charlotte Amalie, and is the most important. It is 30 miles east of Porto

Rico. Less than one-tenth of the people living on the islands are white. No color line is drawn, and whites and blacks enjoy the same privileges in the churches, schools, and in business. Intermarriage is quite common. Everybody speaks English, and while the official language is Danish, English is used in the schools and courts. Nearly everything that is used for the table—flour, fruits, vegetables, salt, canned meats—is imported for the most part from the United States.

On the island of St. Croix there are a number of fine sugar estates, the product of which all goes to New York. The islands, however, are not cultivated to their former extent, and are now almost bare and covered only by a scrubby vegetation, from amidst which the ruins of plantations can here and there be discerned. The climate of the islands is quite healthy, contagious diseases but rarely troubling them.

The old-time prosperity arose from the fact that while the other nations owning possessions in the West Indies were fighting, Denmark remained strictly neutral. In the large land-locked harbor of St. Thomas, a free port, privateers, men-of-war, and merchant vessels could meet in safety and obtain supplies. Its importance as a distributing point has since been gradually declining, and the general depression affecting nearly all the West Indies has been sharply felt.

The possession of St. Thomas by the United States will give this country a more strategic position in the West Indies. The harbor is more accessible and more easily defended than the San Juan harbor of Porto Rico.

THE COUNTRY OF ABYSSINIA

IN November, 1900, Emperor Menelik invited Hugues Le Roux, the distinguished Frenchman, to visit his country. The Emperor desired Abyssinia to be visited by a European of distinction and experience, who should be able to judge with impartiality the degree of culture of his people, the wisdom of his laws, and the nature of the agricultural, commercial, and other resources of the kingdom. Entering Abyssinia under such circumstances, M. Le Roux naturally received every opportunity and assistance. He spent the earlier months of 1901 visiting the Emperor at his capital and later in performing some very important explorations in southern Abyssinia, supplementing the work south of the Blue Nile which Mr. Oscar T. Crosby, of the National Geographic Society, had done north of the same river. M. Le Roux has written the expected volume, describing what he saw and learned. The volume, handsomely illustrated, is to be published by Librairie Nilsson (Paris) and is one of the most interesting on the king, people, and country of Abyssinia that has yet been published. A map giving his explorations in detail was published in *La Géographie* for October 15, 1901.

MINERAL PRODUCTS OF THE UNITED STATES IN 1901

IF all the petroleum produced last year in the United States was put in standard barrels and the barrels placed in a row touching each other, the line would completely belt the earth. Enough coal was produced to give three and one-half tons to every one of the 76,000,000 persons in the United States, and enough gold to give every American one gold dollar. In coal, in iron, in steel, in gold, in silver, in every mineral product except copper, the products of the United States last year reached the highest record in the history of the country.

The silver production of 1901 reached 59,653,788 ounces, against 57,647,000 ounces in 1900. The pig-iron production is estimated at 15,800,000 long tons,

against 13,789,242 long tons in 1900, when the figures exceeded those of any preceding year. The output of coal is estimated at 267,850,000 long tons, against 240,965,917 long tons in 1900, the year of highest production heretofore. Of petroleum, the production is estimated at 2,772,000,000 gallons, against 2,661,233,568 gallons in 1900, the highest previous record. Of copper, the only item in the entire list which shows for 1901 a smaller figure of production than that of 1900, the production is estimated at 265,625 long tons, or about 5,000 tons below the figures of 1900.

Those who wish to study this unequaled record in our mining and metallurgical industries will find in the *Engineering and Mining Journal* for January 4, 1902, a comprehensive review of the year's progress in each mineral product. The *Journal* has recently been greatly enhanced in value and scope through the able leadership of the new editor-in-chief, Dr. David T. Day, Chief of the Division of Mines and Mining of the U. S. Geological Survey, and of the new managing editor, Mr. Edward W. Parker, also of the Geological Survey.

BOLIVIA

SOME years ago the Bolivian Government made an attempt to establish a water route to the Atlantic by sending its commerce down the river Madeira, and thence by the Amazon, more than one thousand miles to the ocean. Though they had ample funds to make the improvements in the water route that were necessary for shipping, the enterprise was finally abandoned. Recently another attempt has been made to discover a water route eastward, but this time by means of the Paraguay, which would carry her commerce to Buenos Aires, also a trip of 1,000 miles to the sea. In the *Geographical Journal* for January, Col. George Earl Church describes the attempt made by Captain Bolland on behalf of the Bolivian government to find an outlet eastward. After prolonged search and exploration along the Alto Paraguay, Captain Bolland reported that the only point where a port could be established on this river without great expense was at Lake Gaiba. This point is about 1,000 miles up the Paraguay from Buenos Aires, and can be reached by river steamers without further dredging of the river; but as Lake Gaiba is nearly 400 miles west of the present productive region of Bolivia, her products would have to be carted this distance to reach the steamers. Long and tedious these river routes would be; but they would save Bolivian merchants from the expense of hauling their products up the eastern side of the Andes, only to be carted down the western slope to the Pacific. On the Pacific coast they would also be thousands of miles farther away from their market. The Bolivian Government hopes to be able to develop further the Paraguay route.

COAL AND IRON IN MEXICO

THE enormous coal and mineral resources of Mexico are daily becoming more prominent, and are destined to bring the country more wealth than all her gold and silver mines. A recent number of *Engineering* contains a symposium of the diverse mineral resources of the Mexican Republic and of what is being done to develop them. In the state of Coahuila it is estimated there is a carboniferous region of nearly 5,000 square miles; in Sonora of 7,000 square miles; in another state a seam 6 feet thick was found at a depth of only 17 feet and followed for a distance of 10 miles, and elsewhere was found a vein 23 feet thick of coal equal to the best Lehigh Valley coal. Many similar instances of the richness of the

coal beds are cited. Very rich iron deposits are also found near the coal region. In Durango is a hill of iron a solid mass of ore 640 feet high, averaging 70 per cent of metal and capable of yielding over three hundred million tons of solid iron. Nearly all her mountains are of metalliferous character. Those that appear richest in mining deposits are on the western chain, extending from the state of Oaxaca to the state of Sonora, a distance of 1,600 miles from northwest to northeast.

The statement of Humboldt some hundred years ago, that probably "Mexico would be the treasure-house of the world," may perhaps be realized.

EDWARD JOHN EYRE

AN Australian explorer of sixty years ago, Edward John Eyre, died in England November 30, 1901. In 1832, then seventeen years of age, Eyre went to Australia to seek his fortune in sheep farming. From New South Wales he wandered to South Australia, which was then separated from West Australia by one thousand miles of unpenetrated desert and wilderness. Eyre thought that a route to the rich pasturable districts in the west of the continent might be found along the shores of the Great Australian Bight south of the desert. After several fruitless attempts, he set out, in the fall of 1840, accompanied only by one white and three native boys, for a journey of nearly 1,200 miles, not one mile of which had ever been seen by a white man. They had advanced half the distance when two of his native companions rebelled, killed his only white companion, and fled. He was left with one native boy to push on. After untold hardships, he reached King Georges Sound in the spring of 1841, where he was picked up by a French whaler that happened to be cruising along the coast.

An account of this expedition is given in the thirteenth volume of the *Journal* of the Royal Geographic Society. This work ended his geographical labors. In 1845 he returned to England, received various colonial appointments, ending with that of Governor of Jamaica in 1864, and at the end of that year retired to private life.

The Report of the Superintendent of the Coast and Geodetic Survey, Mr. O. H. Tittmann, for the last fiscal year describes some of the important work upon which the Survey is engaged. During the year the survey of the coast of the Philippine Islands was commenced, and charts of harbors at all important points were made. The Survey adopted a standard datum, to be known as the "United States standard datum," to which all geographic positions throughout the United States will be reduced whenever possible. An important contribution to the subject of geodesy was completed, "the eastern oblique arc of the United States." In addition to extensive work in progress in nearly every state of the Union, surveys are being made on the coasts of Alaska, Hawaii, Porto Rico, and the Philippine Islands. A survey to determine the magnetic elements is in progress at several hundred stations distributed over many states and territories, in all the island possessions, and in Alaska, and British Columbia.

The Work the U. S. Fish Commission is doing throughout the country is described in the report for 1901 of the director of the Commission, Hon. George M. Bowers. During the last fiscal year 1,173,833,400 fish and eggs were distributed. Most of these were shad, salmon, lake trout, whitefish, pike, perch, lake herring, cod, flatfish, and lobsters. In Lakes Superior and Michigan, 224,000,000 lake trout eggs were collected, from which 19,000,000 fry were hatched. Many lakes and rivers were stocked during the year; as many as 160,000,000 eggs were placed in the Missisquoi River,

in Vermont, while 42,000,000 eggs were taken from Lake Erie to Michigan. The report comments on the increasing scarcity of lobster eggs along the coast of New England, especially south of Cape Cod. The Commission planted in New England waters during the year 202,870,000 cod, 44,000,000 flatfish, and 60,000,000 lobsters.

The Russian Expedition, under Lieutenant Kozloff, to explore the sources of the Yellow and Yangtze Rivers, has returned to Irkutsk in safety, after having made very important surveys in Western China.

A Map of the Bisayan Group of the Philippine archipelago has just been published by the Military Information Division of the War Department. It is on the scale of eight miles to an inch and shows with much detail the geographic features of Panay, Negros, and the other islands of the Bisayan group.

Clarence King, geologist and geographer, died at Phœnix, Arizona, December 26, 1901. In 1863 he crossed the American continent on horseback and joined the California Geological Survey, later discovering and naming mounts Whitney and Tyndall. From 1867 to 1872 he commanded the expedition for the geological survey of the 40th parallel; and organized and was the first director of United States Geological Survey, 1878–'81. To his palæontological discoveries are largely due the evidence which has determined the generally accepted age of gold-bearing rocks.

American Progress in Cuba.—Major W. C. Gorgas, chief sanitary officer of Havana, in his last report presents striking evidence of American progress in that city. During the month of September 16,121 houses were inspected and oiled by the mosquito brigade, but only 1.5 per cent were found to have mosquito larvæ on the premises. When the first inspection was made last March every house had deposits of larvæ. For three months in succession there has not been a single case of yellow fever in the city for the first time in its history. The death rate in the city is now 20.47 per thousand, whereas the minimum death rate during the last nine years of Spanish rule was 28.32 and the maximum 100.08 per thousand in 1897.

The American Museum of Natural History has received preliminary information as to the results of the Jesup North Pacific expedition sent to northeastern Siberia in the summer of 1900. The object of the expedition was to study the points of similarity between the people of northeastern Siberia and the natives of Alaska and British Columbia. The museum announces that definite proof has been obtained that the tribes of northeastern Siberia and northwestern America in early times had more or less intimate connections, partly inferred from the great similarity in their customs and myths.

The Interstate Commerce Commission has in preparation a "Ten-year Book on Railways in the United States." The volume contains tables showing the mileage, equipment, earnings, capital, accidents, etc., of the different railroads, and a summary of the statutory provisions of the states and of the federal government pertaining to the taxation of railway property, the administration of railway commissions, etc., and of the laws that limit, direct, and control the business of transportation by rail.

The Cape to Cairo Telegraph now stretches from Capetown 2,500 miles north, or a few hundred miles less than from New York to San Francisco. The latest station put up is at Ujiji, on the eastern shore of Lake Tanganyika. It is a question now of only a few months

before the wire will be strung as far as Fashoda and the circuit between Egypt and South Africa be complete.

A Gazetteer of the Philippine Islands has been compiled by the Insular Division of the War Department. It contains much information about the civil and military governments, the means of transportation, the cable and postal stations, and other matters of interest. The gazetteer will soon be ready for distribution.

A Map of Mount Hood and Vicinity, Oregon, has been published by the Geological Survey. It is on a scale of two miles to an inch and shows in detail the timber resources of the mountain and its neighborhood. A complete reconnaissance map of the Cascade Range in Oregon on a scale of four miles to an inch has also been prepared.

Texas Petroleum is the title of a very comprehensive bulletin published by the University of Texas Mineral Survey and prepared by W. B. Phillips, Director of the Survey. It gives a historical sketch of the discovery of oil in Texas, describes the nature and origin of the petroleum, of the oil and gas bearing formations, and of its use as fuel. Dr. Phillips states that the oil is being substituted for coal in some Texas establishments; locomotives are being equipped for oil, and that it is being used for laying the dust on streets, and for other equally practical purposes.

The Census Office has published in one volume all the returns relating to the population of the United States obtained by the census of 1900. A series of admirable charts, prepared by Mr. Henry Gannett, Geographer of the Census, illustrate the density and distribution of the population, the sections where the negro and the foreign elements are concentrated, and the other facts revealed by the census. These charts will later be embodied in the "Statistical Atlas," which is being prepared under Mr. Gannett's direction. The general nature of the Atlas will be similar to that for the eleventh census, but of a smaller and more convenient size.

The Progress of the United States in its material industries, a valuable monograph issued by the Treasury Bureau of Statistics, shows in striking manner the rapid development during the past century of the important factors in the present prosperity of the country. The enormous increase in products of the field, forest, mine, and manufactory, the growth in our population, wealth, and commerce, and the extension of railways and telegraphs are clearly presented in a series of clever tables.

A new edition of Stieler's Hand Atlas is being published by Justus Perthes. The atlas will contain 100 copper-plate maps, which are being issued two at a time at intervals of two or three weeks. The price of the complete work is $7.50. This is the ninth edition of this notable atlas, the first having been completed by Stieler in 1831.

The Guide to the Great Siberian Railway, published by the Ministry of Ways of Communication, St. Petersburg, contains a vast amount of geographic matter about Siberia. The volume consists of over 500 large octavo pages, is handsomely illustrated, and gives for each section of the country a bibliography of official, historical, and geographic works.

The Bureau of American Republics has published a bibliography of books, magazine articles, and maps printed during the nineteenth century relating to Brazil. The volume was prepared by P. Lee Phillips, and forms a supplement to the handbook of Brazil recently published by the bureau.

GEOGRAPHIC LITERATURE

Through the First Antarctic Night. By Frederick A. Cook, M. D. Illustrated. New York: Doubleday & McClure Co.

Dr. Cook has the unique distinction of having explored the two ends of the earth. He has worked with the Peary expeditions in the far north, and was an important member of the first party of men ever to winter within the Antarctic Circle. The volume which he

Dr. Frederick A. Cook

has recently published, giving the results of the two years' work of the party on the *Belgica*, forms a notable work. As the surgeon and anthropologist of the expedition, Dr. Cook was naturally most interested in the problems of animal life. There is an interesting chapter on the Fuegian "giants," who average at least six feet in stature; on the great sheep farms of southern Patagonia, where the climate is so mild and pasturage so easy that one shepherd can guard 2,000 sheep; on the geographical discoveries by the expedition, including Belgica Strait and the tracing of a considerable coastline, and on the long South Polar night. The effects of the winter darkness, Dr. Cook believes, are much more severe in the south than at the opposite end of the world. The unceasing storms are harsher and more depressing. Dr. Cook tried the experiment of making his men stand daily for an hour half naked before the fire, and found that the stimulating effect of the sun was thus partly obtained. In an appendix to the volume are included the scientific results obtained by the various members of the expedition. Dr. Cook has given the public an interesting and instructive volume, handsomely illustrated by photographs taken by himself. To gain an idea of what the three expeditions sent out by England, Germany, and Sweden, and now in the far south, are experiencing and aiming for, one could not do better than read "Through the First Antarctic Night."

Descriptive Geography from Original Sources. North America. Illustrated. Edited by F. D. and A. J. Herbertson. London: A. & C. Black. 1901. $0.75.

The selections in this volume have been made with much care and wisdom and the editors are to be congratulated on their success in giving interesting and accurate original descriptions of many geographic features. A work of this nature, however, being a compilation of extracts from many authors, necessarily lacks unity and symmetry. Each description appears more or less

independent of the others. American exploration of Alaska has been so rapid in recent years that it is perhaps not surprising that this work is several years behind in its information regarding the great territory. There is also no reference in the volume to the wheat and corn areas of the United States, though the "Bad Lands" are described.

Dutch Life in Town and Country. By T. M. Hough. With illustrations. New York: G. P. Putnam's Sons. 1901. $1.50.

Mr. Hough presents an interesting picture of Dutch life, more particularly in his chapters on "Court and Society," "The Professional Classes," "The Peasant at Home," "The Administration of Justice," and "The Canals and Their Population." About 50,000 persons live on barges all the year round and form a "canal population." For generations they have been left to themselves, a class apart, and have given color and picturesqueness to the inland waters of Holland; but the spirit of reform is in the air—the government is beginning to interfere, to insist on the education of the barge children, so that in a few years this unique population will disappear. The volume is one in the notable series on "Our European Neighbors," which the Putnams are publishing.

The Bolivian Andes, a record of climbing and exploration in the Cordillera Real in the years 1898 and 1900. By Sir Martin Conway, with illustrations. New York: Harper & Bros.

This book is a narrative of one successful ascent, that of Illimani (21,192 feet), and of two failures, on Sorata and Ancohuma. Were this merely a narrative of these climbs, the book would be dreary reading, but fortunately it contains much more. The author introduces his readers to the central and one of the highest parts of the Andes, to the great desert plain, the Puna, the summit of the Andean plateau, which forms the base of the great peaks, and to the human life of this scarcely known region, in a most charming and interesting manner. The rubber industry and the gold and tin mines of the region visited are treated also with fulness. A map would have added greatly to the value and interest of the book.

South Africa a Century Ago (1797–1801). By Lady Anne Barnard. New York: Dodd, Mead & Co.

Lady Anne Barnard was the wife of the first secretary of Cape Colony. She was a clever, observing woman, in the habit of writing to her friend, the Secretary of State at home, her manner of life in South Africa. Her letters are published in this volume, but are rather disappointing, as they have more to say about the garrison life of her set than of the people of the Cape.

History of Geology and Palaeontology. By Karl Alfred Von Zittel, translated by M. M. Ogilvie Gordon. Illustrated. London: Walter Scott. 1901. $1.50.

A scholarly work, designed for the specialist and of doubtful interest to any one else.

Macmillan's Guides, 1901.—*Italy.* With 51 maps and plans $2.50.

The Eastern Mediterranean. With 27 maps and plans. $2.25.

The Western Mediterranean. With 21 maps and plans. $2.25.

Palestine and Egypt. With 48 maps and plans. $2.50.

These excellent guide books are specially noteworthy for their many beautifully engraved maps and for their convenient size. The editors have given particular attention to the historical, archæological, and artistic features of the countries, and have also included at the end a list of standard books about each country.

Isthmian Canal Routes.—In view of the prominence of the Isthmian Canal problem, it may not be inappropriate to direct attention to the following articles on this subject that have appeared in the NATIONAL GEOGRAPHIC MAGAZINE during the last several years:

"The Nicaragua Canal," abstract of the preliminary report of the Isthmian Canal Commission, January, 1901.

"The Level of Lake Nicaragua: A Question of Permanency of the Nicaragua Canal," C. Willard Hayes, April, 1900.

"The Water Supply for the Nicaragua Canal," Arthur P. Davis, September, 1900.

"The Isthmian Routes," Arthur P. Davis, July, 1899.

"Physiography of the Nicaragua Canal Route," C. Willard Hayes, July, 1899.

"The Proposed American Interoceanic Canal in its Commercial Aspects," Joseph Nimmo, August, 1899.

"The Interoceanic Canal," Emory R. Johnson, August, 1899.

"The Panama Canal Route," Robert T. Hill, February, 1896.

"The Tehuantepec Ship Railway," E. L. Corthell, February, 1896.

"The Nicaragua Canal," A. W. Greely, February, 1896.

NATIONAL GEOGRAPHIC SOCIETY

PROCEEDINGS

MEETINGS OF THE SOCIETY:

January 10, 1902, Annual Meeting.—President Graham Bell in the chair.

The President gave an address on the "Growth and Prospects of the National Geographic Society," which will be published later in this Magazine.

The report, 1901, of the Secretary, Prof. A. J. Henry, was submitted, showing the membership of the Society, December 31, 1901, as 2,661. Of this number 1,592 members are resident outside of Washington, and represent every state and territory of the Union and nearly every nation of the world; 1,025 are resident in Washington, 32 are life members, and 12 honorary members.

The report of the Treasurer, Mr. John Joy Edson, was submitted, showing that on December 31, 1901, the treasury of the Society had a balance of $2,257.

January 24.—President Graham Bell in the chair.

Dr. L. A. Bauer, of the U. S. Coast and Geodetic Survey, read a paper on "The Magnetic Survey of the United States," and Mr. James Page, of the U. S. Hydrographic Office, a paper on "Ocean Currents." Both papers will be published later in this Magazine.

LECTURES:

January 3, 1902.—President Graham Bell in the chair.

Hon. John W. Foster, ex-Secretary of State, gave an illustrated address on "The New Mexico." The paper was published in the January number of this magazine.

January 17.—President Graham Bell in the chair.

Gen. A. W. Greely, Chief Signal Officer of the U. S. Army, gave an illustrated address on "American Progress and Prospects in the Philippines." Further notice of this address will appear later.

January 31.—Vice-President McGee in the chair.

Capt. James F. T. Archibald, tha war correspondent, gave an illustrated address on "Present Conditions in South Africa," which will be published later.

ANNOUNCEMENTS.

LECTURES:

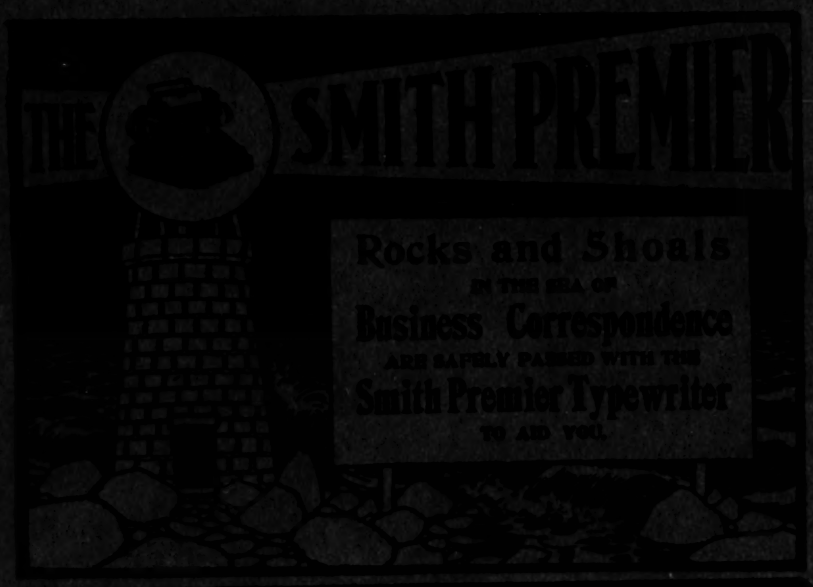
February 14.—"The Proposed Appalachian Forest Reserve," Hon. James Wilson, Secretary of Agriculture, and Prof. Joseph A. Holmes, State Geologist of North Carolina.

February 28.—"Fifty Years of Immigration," Hon. E. F. McSweeney, Assistant Commissioner of Immigration.

MEETINGS OF THE SOCIETY:

February 7, 1902.—"Some American Work in Cuba," Major W. M. Black, Corps of Engineers, U. S. Army.

February 21.—"Notes on the Geography of Alaska," Alfred H. Brooks, U. S. Geological Survey.



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